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AMERICAN GAS ENGINEERING JOURNAL

FORMERLY

AMERICAN GAS LIGHT JOURNAL

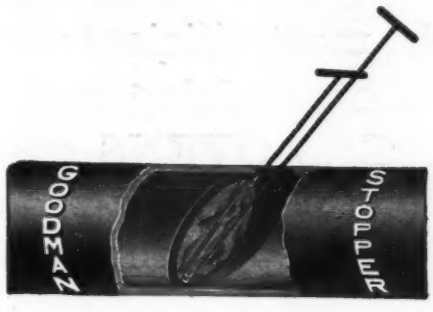
VOL. CVII., NO. 19
WHOLE No. 3114

NEW YORK, SATURDAY, NOVEMBER 10, 1917

Subscription $3 per year
$4 Canada $5 Foreign

The Goodman Stopper
Multiplies Safety

GOLD MEDAL
San Francisco, 1915



SILVER MEDAL
St. Louis, 1904

The men in your plant are entitled to every device designed to prevent accidents—especially a device so useful as the Goodman Safety Gas Main Stopper.

Its quick action multiplies the safety you have established in your system—a turn of the handle—30 seconds—and the gas is effectively stopped.

Don't wait for the accident to happen—equip now with Goodman Stoppers. Hold a size in readiness for every pipe.

Safety Gas Main Stopper Co.

Patrick Goodman, *Sole Owner*

90 Alexander Avenue **New York City**

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KOPPERS

BY-PRODUCT
COKE AND GAS OVENS

The most efficient method of carbonizing coal is in KOPPERS OVENS and the best coke and by-products are produced by this process.

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Tar Distilling Plants
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AMERICAN
GAS ENGINEERING JOURNAL

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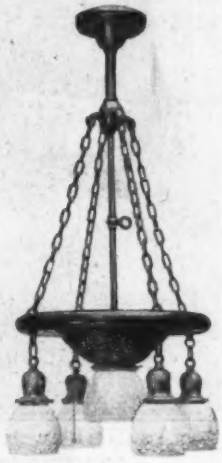
Vol. CVII, No. 19 NEW YORK, NOVEMBER 10, 1917 Whole No. 3114

How the Toronto Gas Company Sells Gas for Lighting in Competition With Electric Rates Which Run as Low as 7/8 Cents per Kilowatt-Hour.



Output of Gas Increased From 5,000,000 Cu. Ft. Daily to 11,000,000 and Number of Consumers From 55,000 to 108,000 in 8-Year Period Since New Business Department Was Established—Experience Has Shown That It Pays to Go in Hard for Lighting Business

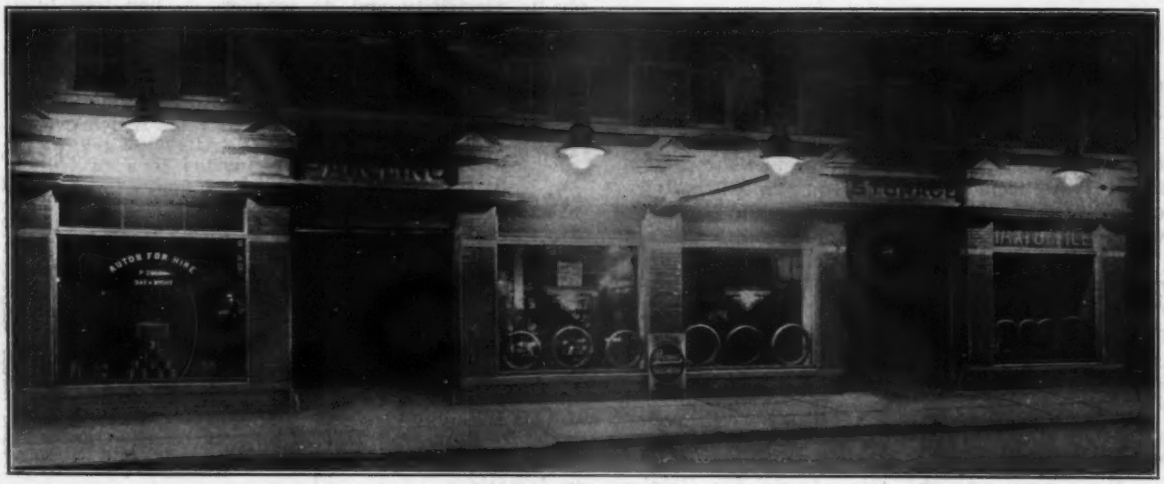
By GEORGE W. ALLEN

Advertising Manager, Consumers' Gas Company, Toronto, Can.

The following story is written in the expectation and hope that it may be of some encouragement to the many gas company managers, salesmen and others who are beginning to feel the effects of competition through the encroachment of the electrical interests into their field of endeavor.

This story may read or seem somewhat like a fairy tale, but it is true, nevertheless, for it is a story of a business success against odds, that is at least worthy of reading by anyone interested in the sale and purchase of gas or gas appliances.

To increase the output of gas from 5,000,000 cu. ft. daily to almost 11,000,000 cu. ft. daily, and to have a growth in the number of consumers of from 55,000 to 108,000, in the face of electric rates which in some cases are as low as 7/8 cent per kilowatt-hour, is the experience of the Consumers' Gas Company, of Toronto, Canada, since the establishment of its New Busi-



OUTDOOR COMMERCIAL LIGHTING HAS ITS EFFECT ON KEEPING GAS FOR LIGHTING CONSTANTLY IN THE MINDS OF THE CITY'S INHABITANTS

AN EXAMPLE OF WHAT CAN BE DONE WITH GAS LIGHTING IN ART FABRICS STORE

ness Department just a little more than eight years ago.

It must also be remembered that although the company has been in business for more than sixty-nine years, nevertheless the increase in business shown was only brought about during the short period mentioned.

The story will tell a great deal of how this happy result has been brought about. It takes up the illuminating side of the question because the writer believes it is this end of it that more particularly interests the present-day gas man, since so many have wondered whether it paid to go after the lighting business.

Worth While to Push Gas for Lighting

It was while conversing with a number of gas men at one of our recent conventions that the question came up as to whether it was worth while to push gas for lighting purposes, especially at a time like the present, when everyone seemed to take it for granted that electric light was the coming illuminant, and since the newer types of electric lamps were making the cost of either illuminant practically the same, and power companies are ever reducing the rate for electric current.

On further conversation with these gentlemen, it was learned that most of them were employed with gas companies selling 80-cent, 90-cent and $1.00 gas for illuminating purposes, as against competition with electric light companies selling electricity at rates from 6 cents per kilowatt-hour to 10 cents per kilowatt-hour.

To these gentlemen the sale of gas for lighting purposes against such low electric rates seemed a losing game, with the natural consequence they hadn't the faith plus courage, very necessary qualifications, to go out and get the business that was practically there for the asking.

In reply I said, "How would you like to go out after commercial and domestic lighting business in competition with Niagara Falls hydro-electric power, a competition giving rates down to, in some cases, as low as ½ cent per kilowatt-hour, and to know also that even the smallest consumer could get current for lighting purposes at 3 cents and less per kilowatt-hour?"

This question was one naturally calculated to arouse interest, and upon being told that such were the rates we commercial men had to meet with in Toronto, with gas selling formerly for 70 cents per 1,000 cu. ft., but now selling at 80 cents per 1,000 cu. ft., the inquiry as to how we did it was instantly on every tongue.

Electric Development a Government Undertaking

Back in 1907 or thereabouts, the Provincial Government of Ontario, Canada, undertook the formation of a commission to undertake the development of the water powers at Niagara Falls and other points in Ontario.

The one grand idea was to supply almost every municipality in Ontario with electrical energy, and to give power so cheaply that the poorest workingman couldn't afford to be without it. It was to be the people's power, developed by the people and for the people, and all surplus profits to come back to the people in the form of greater reductions in rates. How well the Provincial Government Commission has succeeded in its electrical development schemes is plainly shown to-day when the hydro-electric power transmission line of Ontario is one of the longest in the world, extending 240 miles and connecting up almost all the principal cities, towns and villages of western Ontario.

Toronto is one of these cities, and is to-day, perhaps, the largest consumer of electrical energy on the lines of the power commission.

During the building of the hydro power transmission lines, and previous to the current being turned on in Toronto, many of the newspaper editors, especially those favoring the Government ownership of water-power developments, gave hundreds of thousands of dollars' worth of free publicity in the form of write-ups to electricity and its wonders. They told how cheap it was going to be, how every town in the country would be supplied with electrical energy, and how the citizens of every town, village and hamlet would enjoy the benefits of this great natural power for lighting, heating and power purposes at rates which everyone could afford to pay.

Work on Commercial Lighting Started First

At this time, 1908, the Consumers' Gas Company, of Toronto, in order to hold the business that might later on be lost to the electrical interests, established its New Business Department. It was decided to go in for commercial lighting as a beginning and to place gas arc lamps out on a weekly maintenance basis.

A number of lamps were purchased for the purpose of a try-out, and and two salesmen employed to demonstrate to consumers the advantages of gas-company-owned lamps loaned to consumers on a weekly maintenance basis.

Up to this time the company had no real competition, although the Toronto Electric Light Company, a privately owned corporation, was in the business of

supplying electrical energy to a considerable number of the citizens of the city. This company is still in business and in competition with the Government power.

No particular attention having previously been paid by either the gas or electric company to the needs for good lighting in the stores and factories of the city, the new scheme of supplying a continuously satisfactory lighting system therefore appealed very strongly to many consumers whenever the merits of the new system were properly presented.

The scheme proved practical; so much so, that soon after extra salesmen were employed to look after the ever-increasing business; and by the time the Hydro Electric Company was ready for business the gas company had on maintenance something like 6,000 arc lamps and about 8,000 single-burner units. Since that time another 2,000 arc-lamp and 4,000 single-burner units have been added.

THE COMPANY'S GAS LIGHTING EFFORTS ARE HIGHLY AMBITIOUS—THE BIG AND CONSPICUOUS INSTALLATION IS REGARDED AS JUST AS LIKELY A PROSPECT AS THE LITTLE, OBSCURE LOCATION, AND FROM THE PUBLICITY VIEWPOINT MUCH MORE DESIRABLE

In the meantime the Toronto Electric Light Company, the privately owned company, woke up to the fact that the gas company was getting a great deal of its business. Not wanting to lose any more it established a New Business Department of its own, employing a number of high-grade salesmen. It hoped by this move to affect the effects of the gas company's activities.

But, so well entrenched had the Consumers' Gas Company become by having taken time by the forelock, and so well had the corps of maintenance men looked after the lamps, that the consumers were loath to give up the gas-lighting units for something as yet untried, thus proving that wherever you find a satisfied customer you find one who sticks to you, no matter how plausible the enemy's arguments and attacks may seem.

In all this development the gas men had unswerving faith in their proposition. The lamps handled were the best obtainable; the maintenance system in every instance had proven itself thoroughly satisfactory to the consumer. Wherever the lamps were properly placed the greatly increased illumination was something the consumer felt he had never enjoyed in the past.

Gas Company Publicity

The gas company let it be known, by every legitimate means—through booklets, newspaper advertising, etc.—that it was willing to co-operate with the people in every possible way in order to give efficient and practical service.

One very noticeable example of successful competition against electricity, and one which shows how the Toronto company won out against electricity at 7/8 cent per kilowatt-hour, and one which shows what real salesmanship can do for the lighting business may be cited from the following instance:

Business—Poolroom.
Number of Tables—Forty.
Location—Basement, where there is little or no natural light. At no time can pool be played without artificial light.
Owners—Six brothers, well known throughout the city, who are all directors of the pool room company, and who, with the exception of one, were strongly in favor of electric light.
Lighting Facilities—Previously illuminated by forty three-burner vertical gas lamps.
Gas Bill—About $77 monthly.

The building above the poolroom is owned by the same brothers and occupied by them for other purposes. This upper division was previously lighted by gas lamps (seventy-four four-burner vertical gas arcs being used for the purpose), but this business was gradually lost to the gas company, owing, no doubt, to the persuasion of the electric men, and now the basement poolroom was the last ditch. The five brothers were strongly favorable toward the electric lighting of this as well. It was at this point that the gas salesman arrived on the scene.

On account of their large light and power load, also long hours of using, this firm obtained an electric rate of 7/8 cent per kilowatt-hour, a rate almost low enough to scare the most energetic gas salesman.

Salesman Talks "Eye Strain"

It was useless to talk with the five brothers, who

favored electric lighting for the basement, so the representative concentrated his talk on the one brother favorable to gas.

The representative did not talk gas, but rather took up the health and hygienic side of the question and talked—eye-strain.

It was pointed out that to properly play pool or billiards one's nerves needed to be very steady, and as there is usually a deal of smoking in a poolroom, and this, along with the harsh beam of electric light, with its "ultra violet rays," would soon blur the sight and tire the nerves, resulting in poor play on the part of the player, and a general tiredness instead of exhilaration at the end of two or three hours' play.

It was readily admitted by the one brother that he remembered experiencing the conditions as above stated, now that his attention had been brought to it.

One other strong point brought out was the reliability of up-to-date gas illumination when backed-up by a good maintenance service, insuring the firm against loss of business by light fluctuations.

It was also pointed out that gas light is the softest of all illuminations.

The low cost of gas installation, as against the cost of installing forty electric fixtures, forty switches and conduit piping, was also dwelt upon by the representative. The presentation of these facts in a tactful and

OUTDOOR EFFECTS IN FRONT OF STORES OF VARIOUS KINDS

confident manner by the gas company's representative ended in a contract being signed for the installation of forty two-burner Kinetic Bowl lamps.

Free Gas Company Publicity on Consumer's Premises

Entire satisfaction has followed the installation of these lamps; so much so, that the firm has allowed special signs to be placed near each table calling attention to the excellent illumination system which does away with eye-strain and tired nerves.

An advertisement has appeared at intervals in the daily press, calling attention to the excellent illumination system in use by this firm. This advertisement reads as follows:

NO EYE-STRAIN AT BILLIARDS!

Our perfected lighting system brings a soft diffused light to the table; 15 per cent nearer daylight than by electricity. Demonstrated by oculists to be ideal lighting. Orr Brothers' Billiard & Bowling Academy has perfect ventilation secured by two immense Sturdevant & Sheldon fans, each of 20,000 cu. ft. per minute capacity

40 Richmond Street, East, or 40 Queen Street, East.

General satisfaction has also been brought about since the gas bills under the new system of illumination show a reduction of about 60 per cent, which is something to be considered. The contract for this installation was not secured in a day. It took many days of

THE ATTRACTIVE APPEARANCE OF THIS WELL-KEPT BARBER SHOP IS ENHANCED TO A CONSIDERABLE EXTENT BY GAS LIGHTING

strenuous canvassing on the part of the representative before the final word was given to "go ahead" and the contract signed—but it was worth the effort and the salesman who secured the business is to be highly congratulated.

The above instance, of course, is only one of the many hundreds of installations that have been secured and made satisfied gas lighting customers through the proper presentation of facts regarding modern gas illumination.

Many a story could be told of the great arguments put up by merchants and factory men, who were eventually won over to its use, against the use of gas.

The fight continues, but it's a friendly one, and it only remains for the company to keep at it everlastingly, and it will secure a fair share of the business.

One factor that has just recently come to light and which has helped the gas company somewhat, but which later may help it considerably more, is the evident shortage of electric power. The Government power plants, those at present in operation apparently being unable to supply the full demand for power until such times as additional water powers are harnessed and brought into use.

A situation like this creates a demand for gas lighting units, to be used during the electric peak load periods.

How Free Maintenance of House Burners Helped the Gas Company

Knowing that there would be a tendency on the part of some gas consumers in the residential sections to turn over to the use of electricity for lighting purposes, being tempted by the promised electric rates, the gas company wisely established its free house lighting maintenance service.

This service has become very generally known as the "Toronto Plan" of house light maintenance service, and as most gas men know just how the plan is carried out it will not be necessary to go very deeply into the workings of the scheme. I will, however, give a short review of the plan as it is being carried out at the present time.

GAS LAMPS FURNISH ADEQUATE AND ATTRACTIVE ILLUMINATION FOR THIS DRUG STORE

This department was established for the purpose of holding securely the sale of gas for residential lighting purposes. The company thoroughly believed that if residential gas customers could be given a satisfactory lighting service by means of a regular *free* inspection, cleaning and regulating of their house lights, and supplying of mantles and glassware where necessary at lowest retail rates, there would not be the same tendency to turn over to the use of electricity. The people didn't consider that electric light was a better light than gas light, but they thought it more convenient than gas lighting. The result of the establishment of the free service and the good work done by the house maintenance service men has kept a very great many people from going over to the use of electricity. The company has proven to these customers that it could give them the same convenience as that obtainable from any other source.

What the House Lighting Maintenance Men Do

The maintenance men attend to complaints in reference to house lighting fixtures; canvass the houses from door to door for permission to clean and regulate lighting burners, clean glassware, etc., and to sell at regular retail prices mantles and other miscellaneous goods, such as gas irons and small domestic appliances, that may be required; repair leaking fixtures, burners, bypasses, etc., reporting to office any cases requiring the service of special fitters; install miscellaneous fixtures or fitting orders given at salesroom, such as brackets, pendants, burners, glassware, etc., thus providing a prompt delivery service on rush orders direct from salesroom, and fill orders for mantles, glassware, burners, etc.

The men, when they start out, are allotted a district which they are expected to look after and cover as thoroughly as possible.

An automobile has been provided, which enables the department to look after calls in outlying districts.

New men are usually sent out with good maintenance men, to be trained; the training period lasting from two to three weeks, according to the ability of each man to grasp the work.

When it is found that a man can be trusted to go alone he is given a suit-case and stock of mantles of various sorts, by-passes, chimneys, shades and burners, and tools such as two pair pliers, screw-driver, blower, tooth and spiral brushes. A uniform cap and badge is also provided, which is expected to be worn all the time while on duty.

He then goes to his district. If he has any calls to make he attends to them first, after which he is expected to systematically canvass the district, to call at all houses and to inquire if there is anything required in the way of fixtures, domestic appliances, etc., the prospects for which, if he does not himself make the sale, he turns in to his department and they are forwarded to the proper department for attention, when a regular salesman is sent out to take the order.

The house maintenance men were supposed to call at each home at least once every four months.

The men tried to do this, but in a good many cases, owing to the numerous phone calls, found it impractical to do so. The customers were then notified, when once called upon, that when they had trouble with the light not to wait for the four-month period to come along but to phone the message to the office and the trouble would be remedied at once.

All phone calls for the house maintenance service are received by the Pending File or Application Department

and sent to the Maintenance Department for execution. Some calls are sent from the salesroom and some from the Meter Department, etc. These calls are allotted to the proper districts and are taken out by the maintenance men in the morning, or are given to the men when they phone into the department, at least three times a day—viz., after 11.15 a. m., after 2.15 p. m. and after 4.15 p. m. The last call, 4.15 p. m., is to get any rush calls that may have come into the department.

All Calls Taken Before 12 M. Attended to That Day

The rule that has heretofore been applied is that all calls taken in over the phone up to 12 o'clock noon be attended to the same day if possible. If they cannot be attended to the same day the calls are taken in rotation, unless there is a rush call, which is given precedence over the others not so important.

The house maintenance men are instructed to make every effort to please customers and to so regulate and clean the lighting appliance that satisfaction with the gas service will be an inevitable result.

These men have won many friends for the gas company. Diplomatic handling of the many situations, especially where old and out-of-date equipment was in use, has in hundreds of cases ended in the sale of new equipment and completely satisfied customers that gas used in the more modern appliances was unequaled as an illuminating agent.

It is readily admitted that the average consumer cannot himself keep his gas lighting burners in good condition and adjustment, and he would not do so even if he could. It is therefore necessary that someone attend to the work and keep it in proper working condition, or out it goes to be replaced by electricity.

The Consumers' Gas Company in years gone by held practically all the lighting business in the city.

At the time when real electric competition began the company had about 50,000 homes connected with gas services, the gas being used primarily for lighting purposes. But since competition came in there has been a big struggle to keep the business, and if it had not been for the prompt action of the gas company in establishing its house light maintenance service and its commercial lighting department, a great deal of this business would have gone over to the electrical companies.

The electrical men have had their biggest harvest from the newer classes of buildings and homes, the older lighting business being retained in a great measure by the gas company.

But even with the new buildings the gas company was not slow to pick up what business it could get. The company employed, during the big building boom four and five years ago, a couple of special men whose express duties were to follow up the new building reports (these reports being sent into the company by the Building Report Bureau).

Getting Gas Lighting into New Buildings

The new building representative would receive these reports daily. These he would follow up and would endeavor to see the architect, then the owner and builder, and bring to their attention the advantages of gas for purposes of lighting, heating and cooking.

He would expressly point out that Toronto, being an essentially cosmopolitan city, it was a mistake not to place gas piping in the building, as there would sure be someone coming along to rent or purchase the property who would want gas for some purpose.

These new building representatives, like the maintenance salesmen, could point out the wonderful changes that had come about in styles of gas fixtures, burners, etc., and how it was now possible to purchase gas equipment equal in style and quality to anything offered by the electrical men.

Failing to get any satisfaction from the owner or architect regarding the piping of the building for lighting purposes, the representative would bring out the merits of the combination gas and electric system of lighting, pointing out that the home equipped with the combination system would rent and sell much better and quicker than one without such a service. These arguments appealed to a great many owners.

Every legitimate argument that would in anywise end in having the gas piping installed would be used by the representative, with the result that many hundreds of buildings have been piped for gas that otherwise would have gone over to the electrical men; that is, in so far as the illumination end of it was concerned.

Most of the architects, builders and owners would admit that gas for cooking was all right, and would invariably say that piping for such purposes would be installed, but as for piping for lighting it was out of the question; at least, this was the general view held by these men when they were first interviewed by the company's representatives.

One of the gas company's first moves in connection with gas illumination and its endeavors to get the business was to call in a number of fixture manufacturers, with a view to having them make up gas fixtures equal in style and design to any handled by the electrical companies.

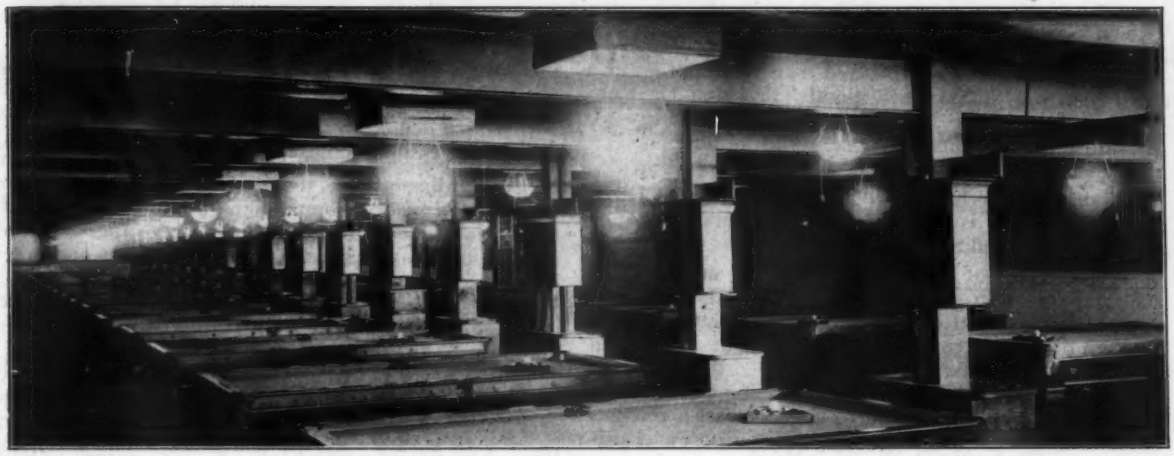
The manufacturers in many instances claimed there was so little call for high-grade gas fixtures that they had stopped making them, being content to manufacture the same old types of fixtures as sold years ago and for which they had still a little sale.

Hygienic Value the Strong Point

However, several manufacturers, on being told the Toronto company was really going to push for new lighting business, did finally agree to manufacture several up-to-date designs, and later on decided to make for the company anything it might require in the way of lighting equipment. The result of such action ended in the company stocking a line of gas, and gas and electric fixtures equally as good as any sold by the competing electric companies.

The company continually sends literature dealing with the hygienic aspect of gas lighting to all physicians, public health officials and architects, in hopes that some of the old arguments put up by people generally, that gas was unsanitary and detrimental to health, may be refuted. The booklet that helped most in this regard was one entitled "The Hygienic Superiority of Gas Lighting," by the late Prof. Vivian B. Lewes, F.I.C., F.C.S.

This booklet deals with the relative hygienic advantages of gas and electric lighting; the matter contained in the booklet being part of a lecture delivered by the



BILLIARD ROOM INSTALLATION BESIDES BEING A GOOD REVENUE PRODUCER IS THE SOURCE OF CONSIDERABLE PUBLICITY FOR GAS LIGHTING

late Professor Lewes in the Lecture Theatre of the Royal Dublin Society, June 19, 1907.

Literature by Dr. Samuel Rideal, and Robert ffrench Pierce and others, was also sent at intervening periods to all those interested in public health.

Every application for a change of meter or for the placing of a new meter is followed up with a "thank you" letter and an invitation to visit the salesroom, where a high-class line of fixtures, stoves and ranges could be seen. Easy terms are given on everything.

Types and styles of fixtures which are now handled by the company, and which have helped greatly in holding a large share of the residence lighting business, are shown in accompanying illustrations. Most of these fixtures are manufactured exclusively for the company, and can also be purchased by the people on easy terms.

Advertising folders and leaflets describing and illustrating these fixtures are continually being sent to prospects by the advertising department.

"Gas News," the company's little house organ, has been greatly instrumental in holding a great deal of business. This little journal was first issued in 1910, having then only two pages and a circulation of 35,000. It has increased in size until at the present time it contains twelve pages and reaches 65,000 homes at regular intervals.

The reading matter is interesting to most of the readers, and deals with ways and means to save gas; how to get better results from the use of gas; helpful hints about the home; a children's puzzle page (prizes being awarded regularly); recipes, and other matter.

The sale of gas lighting fixtures somewhat dwindled during the second year of the war, but last season 1916-17 the sale of fixtures increased beyond that of any previous year and proved to be a record-breaker. This ought to encourage salesmen in other companies to make greater endeavors to get lighting business.

A picture of the house maintenance men of the Toronto company is shown in an accompanying illustration. About twenty-five of these men do duty throughout the summer months, about fifteen more being added to the force in the fall months to take care of the fall and winter business.

The fuel appliance department—gas ranges, water heaters and fixtures—was established shortly after the inauguration of the commercial lighting division. The representatives in this department number from ten to fifteen men. The fuel appliance men are also separated into districts and attend to all phone messages received at salesroom or head office asking for representative to call. These men make it their duty to systematically canvass the territories for new business. Last but not least, and indeed one of the biggest future factors in the sales of gas, is the industrial fuel appliance department. The establishment of this department by the company has justified its existence, for the ever-increasing demand for gas for industrial uses is indeed marvelous.

What the Company Has Found Out

That there are hundreds and hundreds of gas lighting customers who do not want to change over to electric lighting, fearing the use of electricity in the building from fires, lightning, etc. Gas men should remember this and not get discouraged, thinking that everyone is going to use electric light.

That there are hundreds of gas lighting customers who cannot afford to have their places wired for electrict light. The Toronto representatives play up on this phase of the question, pointing out how easy it is to get in the newer types of gas fixtures without spending out money for wiring, as would be the case if electric was to be used.

With commercial lighting, in the case of stores, the merchant is generally only a tenant, and when he sees that the gas company will supply arc lamps or fixtures (retaining the ownership thereof) on a small monthly payment for maintenance, he usually is ready to listen to arguments in favor of gas lighting.

That there are hundreds of workingmen living in rented homes who do not want to change from gas to electric light, unless the landlord will do the work of wiring and also pay for it. In most cities the majority of homes are rented and, if they are already piped for gas and not wired, are good prospects for the gas company and can be made a steady source of revenue. Cases like this, of course, are generally found among the older classes of homes—homes which were piped in the earlier days. Through the gas company's free main-

tenance service hundreds of these classes of homes have been retained as good gas customers.

That hundreds of tenants and owners do not want a dual system of billing each month (this would not apply so much in the case of combination companies), therefore remain content to use gas as an illuminant.

That gas customers are not so willing to or desirous of changing over to electric lighting, if they feel that the gas company is giving good service by maintaining lamps in A-1 condition.

That the cost of gas over electricity is not always a material factor in selling or leasing gas lamps. What kind of illumination can you give for the amount paid is often of greater concern, especially so in commercial work.

That it pays to go after customers using electric light with the plea that they ought to have at least a few gas lights around the home for emergency purposes. Business obtained of this nature should have only the best fixtures installed and equipped with the best of burners and mantles. The greater brilliancy of the gas lamps often leads to a customer preferring it to using the usually small candle-power electric lamps in use on their regular fixtures.

That it pays to continually keep after business and if possible show the people that the gas company is alive, and thus in time to create a favorable impression.

That it pays to not speak disparagingly of electric light, but to more often point out the manifest advantages of the newer forms of gas lighting.

That it pays to train representatives along electric lines as well as gas. To teach them the common electrical terms; to point out the many kinds of electric lamps and how they compare favorably with the newer gas lamps; to teach them the general rates or prices of electric current for all classes of buildings; and to endeavor to show how the electric men get after business. Knowing these things will greatly assist the energetic gas man.

That it pays to smile confidently whenever a customer says "Gas is a back number." The salesman who keeps a bright front is not likely to lose much thereby.

That it pays to only handle the best of mantles, fixtures and supplies. Cheap and shoddy goods will soon cause a reversion against the gas company and a consequent loss of business.

That it pays to give a great deal of attention to the class of salesmen sent out by the company and to always endeavor to employ men who from the very first show by their bearing that they have a fair amount of energy and self-respect and that they seem men who will create favorable mention for the company.

That it pays to teach the salesmen the policies of the company, its history, etc., so that arguments coming up unfavorable to the company's interest may be more confidently and satisfactorily handled.

That salesmen should be taught the hygienic aspects of the use of gas for lighting purposes, so that they can better refute statements made that gas is injurious to health and eyesight.

That commercial lighting representatives should know the many makes of gas lights, and know which would be the most suitable for the many classes of business.

That lighting representatives should have a fair knowledge of the absorptive factors of different colored wall-papers, painted walls, colors of goods in stores, etc. Knowledge of this kind is often a great aid to the gas lighting salesmen.

That all representatives should have a fair knowledge of complaint work, and know how to tactfully handle the different complaints, real or otherwise, that continually crop up.

That lighting salesmen should have always on hand data regarding prices, styles of fixtures and facts relating to the general illumination question. They should endeavor to know something regarding other branches of the business, such as service department and rates, meter department, etc.

That lighting salesmen should endeavor to have with them at all times plenty of literature dealing with the question of illumination.

That it never pays the salesman to ignore the empty store but to keep a close eye on such places, and be ever ready to be on hand when the "To let" or "For rent" sign shows signs of being taken down. Being first on the job has proven a remunerative business for the Toronto company.

Let no man in the gas business feel that he is in a losing game, for there is no business anywhere that offers better chances for advancement than it. It only remains for the man employed in such work to be up and doing; to get a larger viewpoint, and to see and seize the opportunities ever cropping up suitable for men who *know* the business and who are ready and able to take hold when such opportunities appear.

Results Can Be Duplicated

The success of the Toronto gas company can be duplicated elsewhere. The company had to meet overwhelming difficulties to obtain much of its present large business; but it met them, and it is ready to-day, with its increased price of gas and against still lower electric rates, to meet even greater obstacles, because it believes in its proposition; it believes the sale and use of gas to be a vital part of the public's real welfare and for the good of all concerned.

The salesman selling gas lighting and other appliances and eighty or ninety cents or a dollar or more per 1,000 cu. ft. of gas as against six, seven, eight or ten cents per kilowatt electricity has one of the best propositions, if he only knew it, that one would wish to have. If the Toronto company can and has met, with eighty-cent gas, competition of three-quarter-cent per kilowatt electricity, surely others ought to.

Large Proportion of New York City' Companies' Consumers Use Less Than 5 Cents Worth of Gas a Day

It became a matter of evidence recently that more than 400,000 consumers in the boroughs of Manhattan and The Bronx use five or less than five cents' worth of gas each day. Many thousands of gas consumers have monthly bills of less than fifty cents. It naturally follows that there must be several thousand customers who do not pay for the cost of the fuel and service rendered by their gas company. These are times when high prices are perplexing; when the purchasing power of the dollar has dwindled considerably as compared with former days. It costs more to manufacture and distribute gas than ever before, and still this commodity is still sold to you for eighty cents per 1,000 cu. ft.—*Gas Logic.*

The Gas Appliance Testing Laboratory—Part II.

Fallacy of Seeking to Get Along With Home-Made Apparatus—Types of Meters and Thermometers Best Adapted—The Mantle Bumping Machine, Tension Machine, Pressure Gauges, Etc.

By H. M. RILEY and L. B. WILSON, JR.
Consolidated Gas, Electric Light and Power Company of Baltimore, Baltimore, Md.

No laboratory can turn out work with the stamp of reliability and accuracy and at the same time complete this work in a minimum space of time without first-class equipment in the way of apparatus and general laboratory paraphernalia. Generally speaking, it pays not to be too economical in purchasing apparatus for carrying on tests, and any attempt to use a lot of home-made devices to do the work will nearly always result in failure. Then, too, it is quite discouraging to the laboratory men to have to conduct their work with inferior apparatus, causing in the end a tendency toward carelessness on their part.

Of course, there are special times when home-built apparatus answers a useful purpose; that is, where only a fair degree of accuracy is desired.

True, a laboratory can be overstocked with a lot of expensive and intricate apparatus, which condition will tend to lead the men too far from the practical aspect of the work.

In discussing the laboratory apparatus in this article, only those devices of a general nature will be taken up —special contrivances and others being dealt with in succeeding instalments.

Gas Meters

Probably the most essential apparatus in the laboratory is the gas meter, and much care and thought should be exercised in the selection of this part of the equipment.

In this connection, the choice should not be governed by price entirely, but rather the accuracy, durability and adaptability ought to be paramount features for consideration. Fortunately, there are several meter companies which handle laboratory meters of a very good grade.

Needless to say, the meters should be of the wet type, and under no circumstance should a dry meter be used for accurate testing purposes.

As is shown in Fig. 3, there should be one large dial on the typical laboratory meter, indicating 1 cu. ft. for one revolution of the hand, same to be divided into ten major division and each major division divided into ten sub-divisions. Hence a direct reading in one-hundredths of a cubic foot can be taken, and, if necessary, a reading can be estimated to three decimal places.

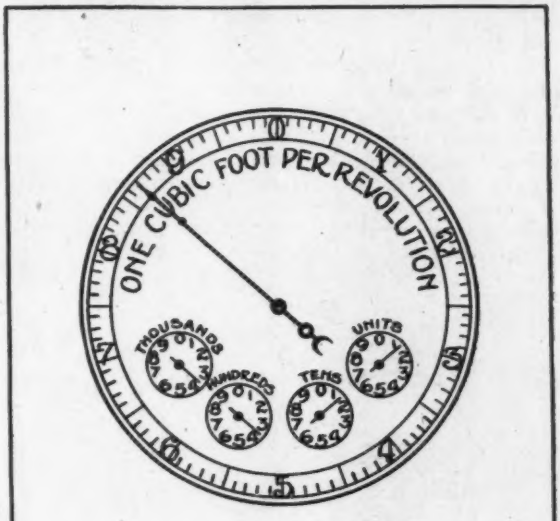
Four or five smaller dials, indicating consumptions as shown, complete the index. The index hands should be made with slip joints, thereby enabling one to readily set them back to zero when so desired.

Care should be exercised so that the meter selected conforms closely to the following requirements:

Body should be of tinned brass.

Remaining parts should be of Monel metal.

As regards the accessories to the meter, there should be two spirit levels on same, leveling screw feet, water level gauge, Fahrenheit thermometer with 1 degree divisions from about 40 to 110 deg., and U pressure gauge.



METER DIAL

Fig. 3.

Fig. 4 shows a typical laboratory meter mounted on a serviceable stand.

Remember when finding the rate of gas flow through the meter to always time for at least one complete revolution of the large cubic foot hand, and never for a half revolution, since there is usually a slight difference between one half of the dial and the other half.

The meters should be painted with a good quality of black paint with a fairly high gloss. Light paint might be considered nicer looking, but soon gets dirty.

The stand shown in Fig. 4 consists of a steel top about 3/16 in. thick with ordinary ¾-in. pipe legs, and is thought to be about as economical and simple as possible consistent with stability and durability.

The number of meters required by a laboratory will, of course, depend on the amount of testing work handled.

In the Baltimore company's laboratory are the following sizes:

2— 15 cu, ft. per hour capacity (3/10 in. differential)
1—100 cu. ft. per hour capacity (3/10 in. differential)
1—200 cu. ft. per hour capacity (3/10 in. differential)
1—400 cu. ft. per hour capacity (3/10 in. differential)

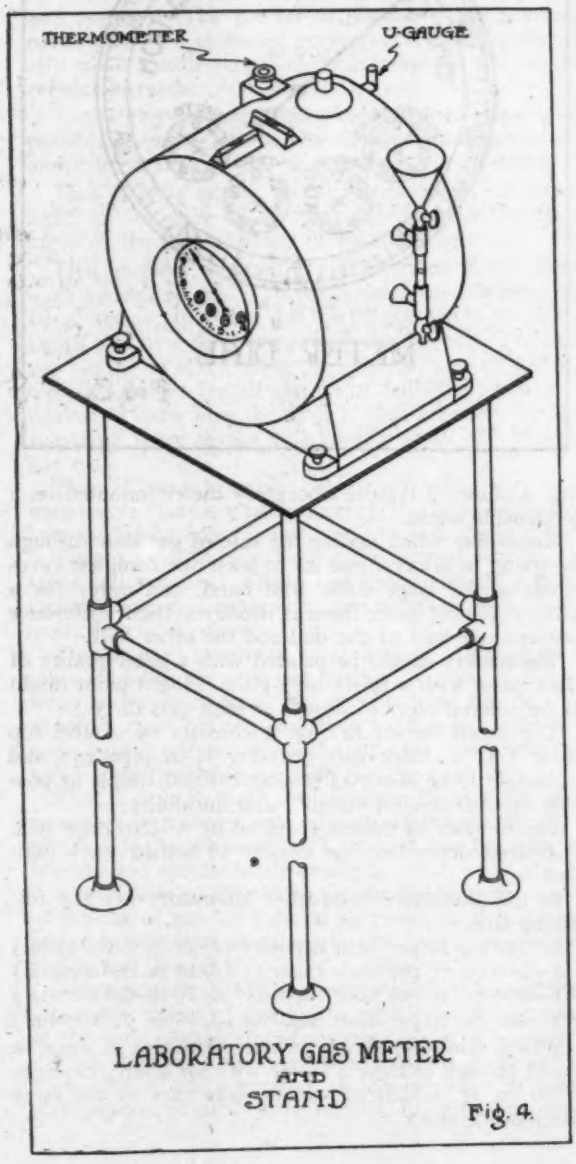
Where considerable photometrical testing is done, it would be well to have a meter with an hourly capacity of 50 cu. ft., which will amply take care of the large size lighting units.

Thermometers

The shape, size and range of thermometers will, of course, vary greatly, depending on the particular need for them. Bear in mind, however, that within reason no laboratory can have too many thermometers. Also, it is a good rule not to use a pyrometer for measuring temperature whenever a thermometer can be used with facility.

It is a good plan to have a standard thermometer, with one degree divisions, which has been calibrated by the Bureau of Standards and which can be used for standardizing the regular thermometers used in the testing work.

Fig. 9 shows the different types of thermometers which find ready and frequent use in the laboratory. Where possible, the entire portion of the thermometer should be armored in neat brass tubing with sufficient opening around the bulb to permit of liberal contact of the medium whose temperature is desired with the bulb itself. Obviously, the object of the casing is to prevent excessive breakage of the thermometers; and, as a matter of fact, the saving in renewals over a period of one year will probably offset the additional cost.



LABORATORY GAS METER AND STAND Fig. 4.

The use of mercury wells are not to be tolerated, for they undoubtedly retard the registration of the true temperature.

The laboratory man should also steer clear of thermometers with readings and divisions not engraved in the glass stem; that is, that type which has the stem mounted on a metal or cardboard strip containing the indications. However, in the case of thermometers for approximate registration, such as those for measuring room temperature, a thermometer of this class can be used.

Where thermometers are used for measuring water temperatures in pipe lines, it is good practice to have that portion of the pipe where the bulb enters somewhat enlarged, so that there is no tendency to retard the flow.

It might not be amiss to mention that a thermometer is an accurate and fragile instrument, and should not be put to any use other than that for which it is intended, namely, recording temperature. To be more explicit, do not subject the thermometer to sudden change in temperature; do not allow it to lay around as you would a lead pencil or ruler, and, above all things, recognize that it is a very expensive chemical stirring rod when used as such.

Fig. 9a depicts the type of thermometer to be used in measuring flue temperature, in some cases water temperature and the like. This style can be obtained with fairly accurate divisions as high as 1,000 deg. Fahr.

In b is shown a thermometer which is applicable for finding water temperatures, steam temperatures, etc., and can be gotten with a right-angle bulb as well as a straight bulb.

The thermometer shown in c is the ordinary wall type, and the stem should be so tightly mounted on the indicating strip that its up and down movement is reduced to a minimum.

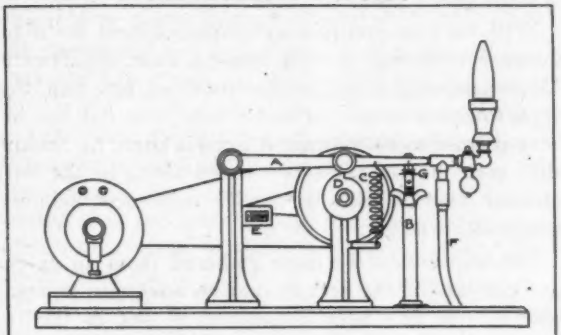
Mantle Bumping Machine

Since the strength and durability of a gas mantle are about equal in importance to its light-giving properties, an apparatus designed to test these properties on a comparative basis must be rather accurate in its make-up and must remain accurate, particularly over long periods of time.

Fig. 5 shows graphically a machine whose function it is to indicate the number of shocks necessary to cause physical failure in a mantle.

The description and operation of the device are as follows:

The mantle is placed on arm A, which rests on support B. This support consists of a long screw which can be raised or lowered at will and locked in any position with a lock nut. The intensity of the bump is varied by adjusting the long screw of the support. Spring C brings the arm firmly against the support as the bumper shock is delivered. Arm A is raised by means of cam D, which is cast in the side of the pulley driven by a small 1-15 hp. motor whose speed can be varied by means of a rheostat or lamp bank. Four speeds are sufficient for all testing purposes. Concentric with the large driving pulley is a smaller pulley (not shown) which engages the pulley operating the counter E. The



MANTLE BUMPING MACHINE

Fig 5.

pulleys are so proportioned as to cause the number in the counter to increase one unit for each bump delivered. Gas tubing F permits gas to be supplied to the mantle in case it is desired to conduct the test with the mantle lighted.

The arrangement G for determining the linear drop of arm A indicates on the following basis:

Threads to inch (screw B).....	13
Divisions on circular plate.....	$77\frac{(1000)}{13}$
Each division on plate.....	0.001 inch

Now, in case it were desired to test a mantle with a bump caused by a drop of 0.05 in., the long screw would be screwed out until the highest part of the cam just touched the idler wheel on A. Next, the long screw would be screwed in until fifty divisions on the circular plate had passed the pointer and the machine would be ready for operation.

It is to be noted that this scheme also compensates for any wear on the cam and idler wheel of arm A. The results obtained with this apparatus are quite satisfactory.

Tension Machine

The tension machine shown in Fig. 6 is quite a useful adjunct to the laboratory equipment, and, as can be seen, it can be easily and inexpensively constructed. By means of this device, one is enabled to determine such matters as the tensile strength of appliance tubing, purchase or grip of various hose ends on hose connections and various kindred tests of a miscellaneous nature.

It consists of a strap iron framework supporting a stationary spring balance of about 100 lb. capacity, which is connected to a rectangular link, on the end of which is a short nipple and hose connection. Incidentally, this hose connection can be removed and some clamping devices used when strips of different material are to be tested.

At the other end of the framework is a drum which can be revolved through the medium of a gear wheel on its end engaging a ratchet and pawl.

It might be found advisable to cover the drum with a material such as adhesive tape, thereby giving the hose to be tested a good purchase. (Hose is wrapped around drum several times.)

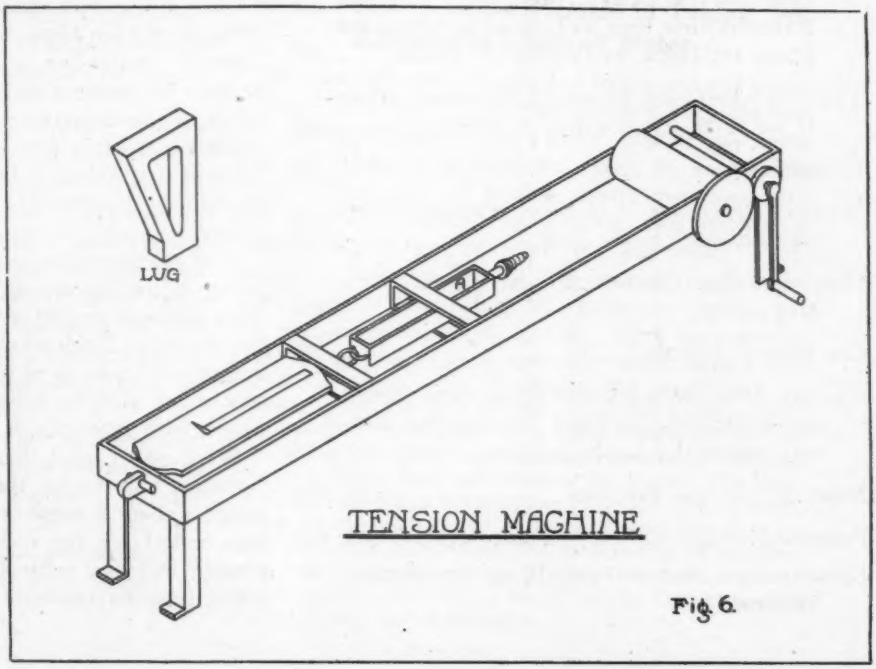
A triangular-shaped hollow metal lug is provided, and at the start of the test is introduced into the link at the point A. Then, as the tension proceeds and the scale pointer and link move farther to the right, the lug gradually descends, so that when rupture or slippage of the test piece takes place the pounds' pull can be easily read, since the spring is constrained by the lug from resuming its normal position. Also a noisy rebound is eliminated and at the same time the wear and tear on the spring balance is reduced to a minimum.

Pressure Gauges

For most testing work, and where comparatively great accuracy is most desired, the ordinary U-gauge, as shown in Fig. 7, finds ready use in the laboratory. The pressure reading is gotten by simply adding the upward displacement of the water in one leg to the downward displacement of the water in the other leg.

Although it is generally thought that the use of water in a U-gauge gives an accurate reading of pressure, as a matter of fact it is known that the water attracts to the dry walls of the glass and can easily cause an error of one-tenth of an inch. Hence, it is worth considering whether it would not be well to substitute a mineral oil of low viscosity for water in pressure gauges, both the U-type and the Differential. It would then be a simple proposition to compute the pressure in inches of water by multiplying the oil displacement by its specific grav-

(*Continued on page* 430.)



TENSION MACHINE

Fig 6.

AMERICAN
GAS ENGINEERING JOURNAL

FIFTY-NINTH YEAR

Published Weekly by
AMERICAN GAS LIGHT JOURNAL, INC.
42 Pine Street, New York, N. Y.

ELBERT P. CALLENDER, *President*
STANTON G. KRAKE, *Vice-President*
FREDERICK A. SOUTHWORTH, *Secy-Treas.*

EUGENE C. MILES, *Editor*

Subscription $3.00 per year, including postage in the United States, Mexico, Cuba, Porto Rico, Hawaii or the Philippines.
In Canada, $4.00 Foreign, $5.00
Single Copies, 10 Cents.

WESTERN MANAGER
E. B. FRITZ

CHICAGO OFFICE
537 So. Dearborn St.

Entered at the Post Office, New York City, as Second Class Matter.

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A New Department

Without any preliminary announcement we inaugurated with last week's issue a new department, "Merchandising Gas." The Journal has had this department in mind for some time, but did not believe it wise to inaugurate it until it could be reasonably sure that it could be carried along in the only manner that would justify its existence; namely, practically useful.

The impression we have gathered from an extensive canvass of the field is that no adequate journalistic service has been organized as yet in the interests of the commercial end of the industry. Contemporary gas journals have run commercial departments for years and the American Gas Engineering Journal, without essaying particularly to cover this branch of the industry, has run considerable matter on the selling of gas. But the needs and demands of the field have not been met in a manner gas men consider adequate.

It is the opinion of the American Gas Engineering Journal that no adequate commercial department can be organized in a gas journal unless it has the active co-operation of those actually engaged in the commercial branch of the business. Such a department, in order to be really useful, must be prolific in suggestions as to new uses for gas and means of selling it.

All new developments in the appliance field, new inventions and improvements to existing appliances, are strictly pertinent to such a department and should be described in it. These are the tools of the gas merchandiser's trade, and he should be acquainted with them.

But, unless this class of material tells him something he did not know before—unless it is "news" to him—it creates an atmosphere of antiquity that lessens his interest and confidence in the other features of the department. How far ignorance or indifference to this fact has been responsible for the opinion that exists in the field in regard to the merchandising departments of gas journals, as they have hitherto existed, it would be difficult to determine.

It is not necessary to the success of such a department; in the opinion of this journal, to adopt slapstick methods and to intermix serious business with low comedy. Such a course would presume that the commercial man is of a lower order of intelligence that must have its enlightenment fed to it in small doses, with intervals of lighter reading in between.

We do not expect that the contributors to this department will discuss their subjects in the same language a chemist would employ to explain the principles underlying the recovery of light oils. In discussing technical subjects technical terms which are perfectly understandable to the particular reader who

is interested furnish a short cut by which a long story can be told in fewer words.

The merchandiser deals with a human subject. He has had to express his thoughts in the language of the layman to effect his sales. Consequently he reads easier and absorbs the information offered better if non-technical English is employed.

Experience is the best teacher in any field. Consequently it is the intention of the JOURNAL to endeavor to obtain the matter it publishes in this department from the men who are actively engaged in selling gas. The writer is without a doubt an extremely useful member of society, but we believe that the gas merchandiser will learn more of practical value to him in his own work from the experiences of other workers in the merchandising branch than he possibly can from the theories of mere writers.

We do not say that the department as it is constituted in the two issues now run is the embodiment of the ideas we have outlined for it. It may not be for some time to come. But we have started to build and will continue to build until we have brought it as near as possible to the ideal we have set for ourselves.

Practical commercial men tell us our weakness will lie in that we will find it utterly impossible to obtain the gas merchandiser's active co-operation. He will sympathize with you, they say, and wish you well, and intend to write something for you in the future, but they never will.

Such doubts do not discourage us in the least. A year ago we declared in these columns that no gas journal could adequately fulfill its mission unless a very considerable proportion of the matter it published was contributed directly by men actively engaged in the industry's work. Practical gas men and practical gas journalists told us it couldn't be done—the gas man simply would not write.

Nevertheless we made energetic efforts to induce him to do so. Those who have followed the JOURNAL during the past eleven months already know the result. Very many gas men have contributed articles to the JOURNAL during that period on a wide variety of subjects. The reason such a condition never existed before was mainly that the journals never made an efficient effort to win their co-operation in that respect, and not because of indolence, restrictions on the part of managements or natural disinclination on the part of gas men for such work.

With this experience we have full confidence in our ability to secure the co-operation necessary to make a success of the new merchandising department. The fact that the need of really helpful and practical information is felt by gas merchandisers generally is a factor that will contribute largely to such success.

The Gas Appliance Testing Laboratory Articles

In this issue we publish a second article of the series on the gas appliance testing laboratory by H. M. Riley and L. B. Wilson, Jr., of the Consolidated Gas, Electric Light & Power Company of Baltimore. The first article—published in the issue of Oct. 27—discussed the selection of the personnel of the laboratory and the layout and piping. The present article deals mainly with details of equipment. Later articles will deal with the tables most generally consulted, the calculation of heat problems and descriptions of the methods of testing several types of appliances.

These articles will have a permanent value to any gas man who aspires to a high place in the gas industry; an immediate value to those who have already attained such places.

It is superfluous to advise those who regularly bind their copies to preserve the numbers in which these articles appear. Those who do not bind their copies should make it a practice, however, to set aside and retain these particular numbers. When the series has been completed they will then have available a complete manual of gas appliance testing laboratory methods and practice.

It may be it will not be the last word on the subject—in fact, the primary object of the authors in undertaking the work is to stimulate discussion which may lead to a complete and efficient standardization of gas appliance testing laboratory practice—but it will, undoubtedly, serve as a text book and reference for several years to come.

Copper Wire to Avoid Trouble in Taking Out Electrically Charged Meter

The stray electric currents that follow gas and water systems are a fruitful source of trouble when the two are metallically connected as in the case of gas water heaters. When this condition exists an appreciable amount of current will flow in varying quantities until the metallic connection between the two systems is broken, which may be when the gas meter is removed. This opening of the circuit produces a small electric arc which is liable to ignite the gas and cause explosion or fire. Very fortunately, most of such conditions are discovered before any accidents occur. To eliminate the possibility of trouble when working on such a meter, a heavy copper "jumper" or electric by-pass is connected to the two pipes on either side of the meter, the ends of this wire being well soldered to the pipes. The copper wire affords a continuous path for the current, which is of much lower resistance than the pipe itself, and this eliminates the possibility of electric arcs when removing or replacing the meter in the future.—*A. U. Brandt, in the Wrinkles Department of Pacific Coast Gas Association.*

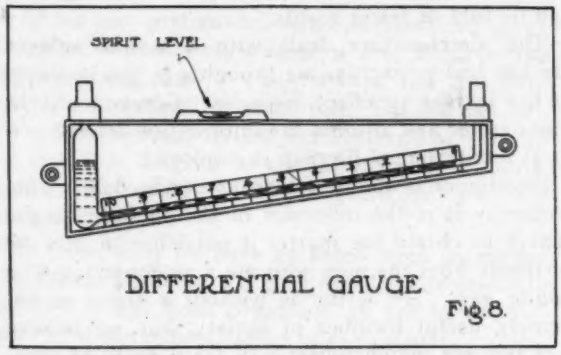
The Gas Appliance Testing Laboratory—Part I.

(*Continued from page 427.*)

ity. Another item for consideration in using U-gauges is to have them fairly vertical.

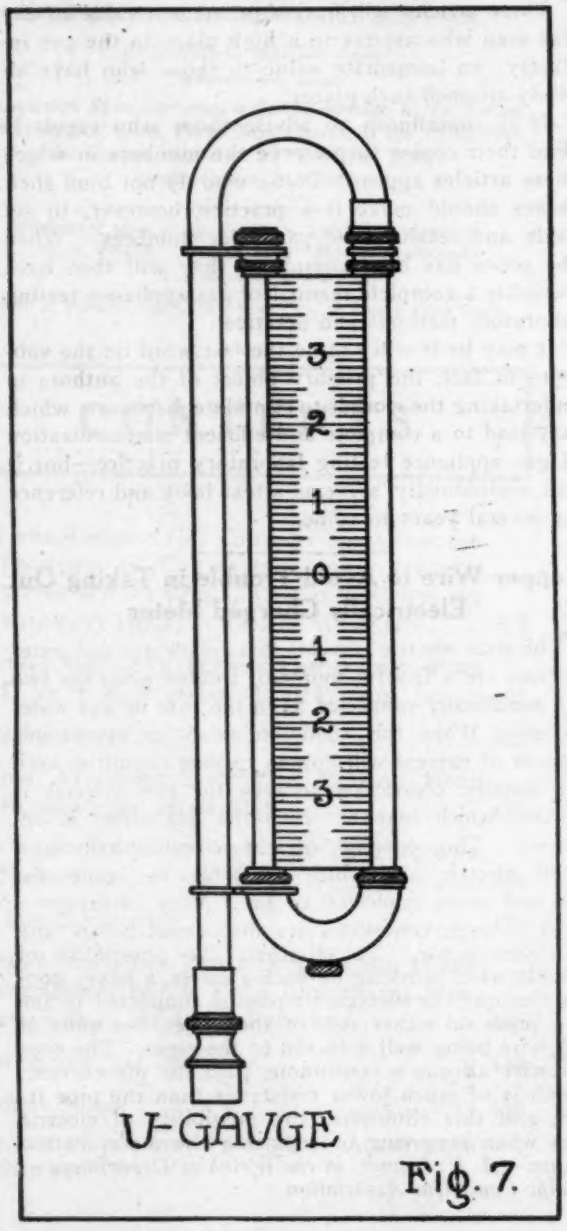
When considerable accuracy is required in ascertaining pressures, etc., the Differential gauge shown in Fig. 8 should be used. As a general proposition, a colored mineral oil is used in this type of gauge. According to Fig. 8, a displacement of oil from 0 to 1 is equivalent to a column of distilled water 1 in. high. These gauges come in larger sizes, reading as high as 4 in. of water pressure and to within a hundredth of an inch.

It can be seen that to have a differential gauge to read as high as 8 or 10 in. of water and to within a hundredth of an inch it would have to be very long and, offhand, would seem somewhat impractical.



DIFFERENTIAL GAUGE

Fig. 8.



U-GAUGE

Fig. 7.

The U-gauge is also quite useful as a substitute for a steam pressure gauge when testing gas steam radiators and the like. This is done by obtaining a gauge long enough, filling it with mercury and connecting it to the radiator. Then it is an easy matter to read the displacement of the mercury and convert the reading into pounds per square inch.

The writers have found that the laboratory men would rather use this method for finding steam pressure than to employ a steam pressure gauge, even when it is admitted to take more time to arrive at the pressure. It is the accuracy and reliability that appeal to them.

Gas Analysis Apparatus

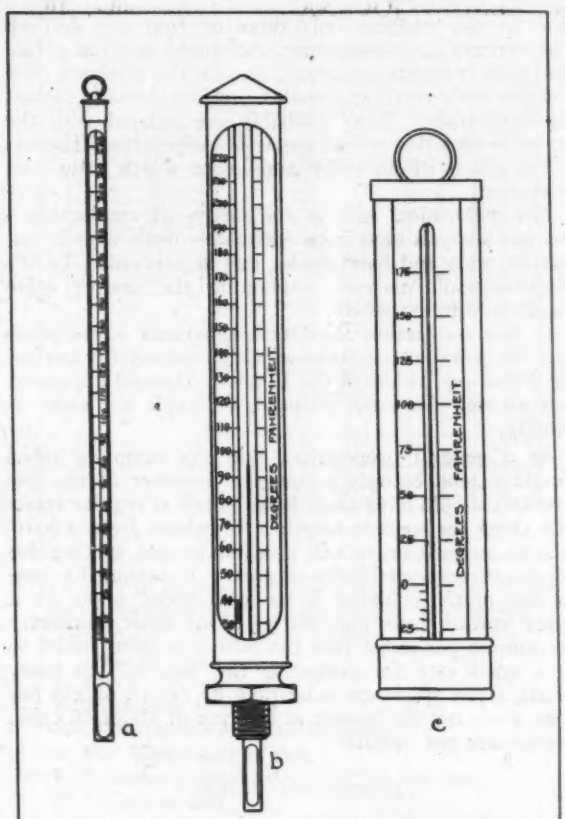
Volumetric gas analysis apparatus is quite generally to be found in chemical laboratories operated by a considerable proportion of the gas companies. In the testing of gas appliances it is necessary that the analysis of the gas supplied be known, but if the company is already operating a chemical laboratory where the gas is subjected to regular and frequent analysis, and the appliance testing laboratory and chemical laboratory are situated at the same point in the distribution system and supplied by the same system of housepiping, the analysis of the gas by the former will represent a needless duplication of work.

In the event that the appliance testing laboratory must do this work, it is advisable to include in the laboratory equipment an Elliot or Barnhart apparatus, each being less complex and more simple to operate, though somewhat less accurate, than the Hempel apparatus. The Elliot or Barnhart apparatus is, however, sufficiently accurate for the purpose.

The Barometer

Another essential piece of apparatus for the laboratory is an accurate barometer for indicating atmospheric pressure. The most common forms of this device are the mercury well type and the aneroid type. Where portability is essential, the aneroid barometer is to be preferred. This instrument registers the atmospheric pressure by the movement of an indicator hand over a scale. The position of the indicator is controlled through a gear by the pressure exerted by the atmosphere on the cover of the metallic case which has been exhausted of air.

For the laboratory, the feature of portability is not essential and the mercury tube barometer receives preference due to its simplicity and its dependable accuracy.



LABORATORY THERMOMETERS.
Fig. 9.

In this type of apparatus, a vertical glass tube containing a column of mercury has its lower end submerged in a cup of mercury. The space in the tube from the upper surface of the mercury column to the upper end of the tube, which is closed, has been exhausted of air. Atmospheric pressure upon the surface of the open mercury well supports a column of mercury in the tube whose weight or gravity is equal to the atmospheric pressure. Thus variations in atmospheric pressure are accurately indicated by the lengthening or shortening of the mercury column, and direct readings of the atmospheric pressure are made by observing the position of the upper surface of the mercury column on a calibrated scale attached to the mercury tube.

As stated above, this form of barometer is especially desirable in the laboratory.

The Hygrometer

Inasmuch as it is often required in testing work to know the amount of moisture in or the humidity of the atmosphere, a hygrometer must be provided. The ordinary hygrometer consists of two mercury thermometers which are attached together. The bulb of one thermometer is open to the atmosphere, while the other is surrounded by a cup device into which is placed raw cotton which is saturated with water.

The dry bulb thermometer registers the room temperature, while the evaporation of the water from the saturated substance surrounding the wet bulb thermometer produces a cooling effect which is indicated by the lower temperature reading on the thermometer scale. The dryer or less saturated the air the more rapid will be this evaporation and the greater the difference in the readings on the two thermometers.

In order to facilitate this action, the thermometers are often mounted together in a wooden frame which is whirled rapidly through the air by the investigator. A much more convenient method of accomplishing this same result in the laboratory may be had by mounting the wet and dry bulb thermometers permanently at a convenient position on the wall of the laboratory and, instead of moving the apparatus through the air, move the air against the apparatus by means of a small electric fan, 3 or 4 in. in diameter, located adjacent to it on the wall.

The Calorimeter

As has been stated under the subject of gas analysis, a large number of gas companies operate chemical testing laboratories. In these cases it is usual that the calorific value of the gas is determined in conjunction with the volumetric analysis of it. Where this is done and the two laboratories are supplied by the same system of housepiping, it will be unnecessary to provide a calorimeter in the equipment of the appliance testing laboratory.

The calorific value of the fuel is, of course, essential data in appliance testing work and, unless otherwise provided for, makes it necessary to have a calorimeter as a part of the laboratory equipment. The Junkers calorimeter, manufactured by the American Meter Company, is to be recommended. Details of its construction and operation may be had by application to

TESTING LABORATORY

FRONT STREET STATION

CONSOLIDATED GAS ELECTRIC LIGHT AND POWER COMPANY

Report No. 140 Appl. Date of Test Oct. 17, 1917

Title of Test VICTOR GAS IRON
(FOR EFFICIENCY ONLY)

Appliance Mfd By A.B.C. CO. BALTIMORE, MD.

DATA AND RESULTS

APPARATUS USED - Victor Gas Iron
Meter #1-A
Thermometers #7 and 10
Scales and Tank
Stop Watch #3
Iron Calorimeter

TESTED AT [illegible] OF - John Doe,
New Business Dept.

OBJECT - To determine thermal efficiency of iron.

DESCRIPTION OF IRON - See Report #85 Appl..June 28, 1917.

SAMPLE-REPORT TITLE PAGE.

Observers J. T. Jones.
E. C. Smith

Approved C. B. C.

the manufacturer, or the American Gas Institute Report on Calorimetry can be consulted.

The Chemical Balance

Although a fine chemical balance is not necessarily to be included in a list of essential appliance testing laboratory equipment, there are many occasions when such an apparatus is to be desired. There are so many styles and makes of chemical balances that the selection of this instrument is left to personal preference. It is well, however, to call attention to the fact that an attempt at economy in selecing this delicate instrument may result badly, and also to the fact that a chemical balance should be situated where it is not subjected to vibrations or shocks or to any condition which will render its delicate adjustment ineffective.

Specific Gravity Apparatus

There are two general methods for determining the specific gravity of gas, which should be mentioned and known as

1. Effusion Method.
2. Density Balance Method.

The effusion method is the one in general use to-day, its basis being the fact that the speeds of effusion of different gases are approximately proportional to the square roots of their densities. In applying this method it is only necessary to record the time required to pass a certain volume of air at a certain pressure through a fixed orifice, and the time required to pass a like volume of the gas under the same pressure through the same orifice. The specific gravity of the gas is found by substituting the recorded time required for the passage of the gas and of the air in the following equations:

$$\text{Specific gravity of gas} = \frac{t^2\,(\text{gas})}{t^2\,(\text{air})}$$

The Bureau of Standards recently issued Technologic Paper No. 94 concerning the effusion method of determining the density of gas, in which it was shown that this method is in some cases quite inaccurate, the error in one case being about 14 per cent.

The Bureau of Standards in Technologic Paper No. 89 calls attention to a gravity balance which has been constructed and is now on sale. The tests conducted by the Bureau of Standards show this apparatus to be most accurate, and the attention of the reader is therefore especially directed to it. The importance that the density of the gas plays in the design and operation of gas-burning appliances is each day being more generally recognized, and it is therefore essential that a reliable and accurate method of determining this property be provided for use in the testing laboratory. It is expected that the new device will be almost universally used in a few years.

Flue Gas Analysis Apparatus

The matter of properly determining the proportion of the constituents in the products of combustion is of great importance in insuring the accuracy of certain tests and calculations. So many times the procuring of a sample of flue gas and the subsequent analysis is not given due thought, with the result that this phase of the work is carried out in a somewhat slipshod manner. Peculiarly, there seems to be a lamentable tendency on the part of men conducting chemical work to apply more mental concentration to an analysis which involves the determination of six or seven constituents than to one wherein only three or four are desired. The writers have seen men who could analyze a fuel gas with complete accuracy, handle the analysis of a flue gas with amazing abandon and, incidentally, amazing inaccuracy. They probably are imbued with the practical idea that a fuel gas is of some value, whereas a flue gas is of no value and hence worth little consideration.

The mechanical routine and theory of conducting a flue gas analysis have been adequately dealt with in numerous texts and hand-books, one in particular, Lord's Metallurgical Analysis, explaining the matter quite lucidly and interestingly.

In this connection the Orsat apparatus offers probably the best means consistent with accuracy for analyzing a flue gas, although the Elliott & Hempel apparatus will answer the same purpose, although not quite as handily.

As a general proposition, flue gas sampling tubes should extend entirely across the diameter of the flue pipe and should have small holes bored at regular intervals along their entire length. Anywhere from a half-inch to an inch or so will give the proper spacing for the above mentioned holes or ports. In taking the sample too much hastiness is to be frowned upon, as it might lead to some inaccuracies. One cubic centimeter per minute per cubic foot per hour has been found to be a good rate for collecting the sample. In other words, if an appliance is burning 60 cu. ft. of gas per hour, draw out the sample at the rate of about 60 cubic centimeters per minute.

Laboratory Report

The laboratory report is of co-ordinate importance with the calibration of the apparatus and the actual conduct of the investigation or test. Too often the importance of the report is minimized in the mind of the investigator, with the result that much valuable data is either not recorded at all or is recorded in such a way that it is practically useless when required. Failure to realize that the report is actually as fundamental as the calibration of apparatus or the accurate conduct of the test has been responsible for much loss of valuable time, and has only too often made it necessary to repeat a test which in all other respects has been properly made, and but for the careless recording of the data obtained would have successfully disclosed the information sought.

It is well to bear in mind that the laboratory report is the permanent record of the test, and as such it is worthy of prime consideration.

The reader of the laboratory report may not know or care about the details of the laboratory or the actual physical work involved, but he will want to know the conclusion reached and the basis for such conclusion. The reliability and accuracy—in fact, the fitness of the laboratory man—will more often be judged from the record that he produces than in any other way.

The report should be written in a book or on paper of a suitable form. The authors have found that cross-section paper 8½ by 11 in., with about five lines to the inch, provides a most convenient record form. The size of this sheet corresponds to that of the usual letter-head, and may thus be conveniently filed in the standard letter file. The cross-section ruling is convenient for the tabulation of data, and makes it un-

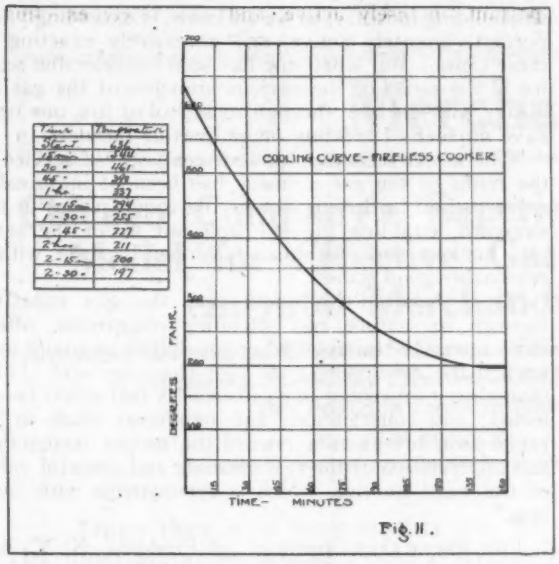


Fig. 11.

necessary to rule up log sheets for each test; it also assists in the drawing of rough curves or sketches.

The report should state clearly:

1. Date of test.
2. Place of test.
3. Appliance tested.
4. Manufacturer of the appliance.
5. For whom test is run.
6. Apparatus used in conducting the test.
7. Object of test.
8. General description of the appliance under test.
9. Outline or description of the method of procedure during the conduct of the test.
10. The log of the results of the test, including all figures obtained by the observations made both in the actual test of the appliance and in the calibration of any apparatus. These figures are, when possible, presented in tabulated form.
11. The conclusions regarding the information desired by those for whom the test is made.
12. The signatures of those who conducted the test.

The original laboratory report should, in general, be filed in a suitable way in the laboratory, accurate typewritten copies of it being sent to those interested in the results and entitled to receive the information obtained.

For the convenience of the laboratory chief, in order that he may readily refer to any test that has been made, the maintenance of a card-index file is advisable. A sample card from such a card file is shown in Fig. 10. The name of the appliance appears at the top of the card, and is followed by the number and year of the report, the date of the test and the most vital information concerning the results of the test, namely: whether the appliance was recommended and the reason for the decision, the consumption, the manufacturer and the number of photographic negatives made and presented with the report.

This card file contains the most essential facts regarding the results of the tests, and the complete report may be referred to when facts in greater detail are required.

For the typewritten copies of the report it is desirable to use a standard form, such as that shown, for the title sheet of all reports.

In compiling a report, the author should be careful to see that it is complete, accurate and conclusive; also that the diction is clear and concise. It must, however, be borne in mind that, although reasonable brevity is desirable, the author must not assume that the reader will necessarily be a technical man. The report should be readily understandable to the average non-technical reader.

There are two standard methods of presenting data, namely: numerically in the form of tables and graphically in the form of curves. This latter method is most desirable and should be used whenever possible, for the reason that it presents information at a glance which in numerical form would require of the reader much greater mental concentration. To illustrate this point, note the following presentation of the data (fictitious) obtained in the test of a fireless cooker to determine the heat loss over the entire period of time (Fig. 11).

Another feature which adds materially to the laboratory report is the presentation with it of photographs of the appliance.

In order that suitable photographs may be made, the authors have provided a roller curtain for use as a background as a part of the laboratory equipment (see laboratory layout). The use of photographs, which are inexpensive, not only adds much to the appearance and interest of the report, but also makes possible the elimination of long wordy descriptions which would tend to weary the reader and would require much valuable time in the writing, and also in the reading, and could not even then convey the precise information as presented by an actual photograph.

In order that the laboratory reports be better preserved, it is suggested that they be permanently bound each year. This may seem to the reader a needless expense; but when it is considered that the report is the only tangible product of a laboratory which represents quite a considerable investment of both money and brains, it is quite apparent that the permanent preservation of this product justifies this small expenditure.

Women Appliance Adjusters Proving More Satisfactory Than Men

Chicago Company Graduates Five From Service School Every Three Days—Change Not Due to Desire to Economize on Payroll, But to Man-Shortage

Now comes the "gas-woman." She has not only arrived, but is here to stay for the duration of the war—at least, so far as the Peoples Gas Light & Coke Company, of Chicago, is concerned. This company now has a force of more than twenty women gas appliance adjusters and is graduating an additional class of five "gas-women" every three days at its service school.

John Williamson, vice-president of the Peoples company, is father of the idea.

"I had been thinking for some time that during the war we would have to put women to work in many more departments of the gas company," Mr. Williamson said. "Then one day I saw a moving picture called 'How England Prepares.' This picture showed women doing all sorts of mechanical work that I had no idea they could do. I then decided to replace the men who have gone to war by women.

Plan Working Out Successfully

"Is it working out successfully? It is so successful

that I am really disappointed. Reports I have received indicate that the women are doing this particular work better than the men. They are better received in the homes. There is less suspicion. A woman can talk to a woman. I don't know what this will develop into, but it is possible that we will introduce women to other of our departments heretofore confined to men."

It was made clear at the Peoples company office, however, that women were being used to replace men not because of any saving on the payroll, but purely because of the growing scarcity of labor and the desire of the company to conserve the man power of the nation for war work.

At the company's school for gas fitters the women pupils are taught how to connect and adjust stoves, heaters, meters, lamps, piping and all the appliances served by the domestic division of the company. After three days' instruction at the school the women are sent out for three days as assistants to gas-men or veteran adjusters. Those that prove capable are then allowed to work independently. The women's only uniform will be a sleeve protector and a canvas bag of tools. C. V. Morgan is chief instructor to the women at the school.

How the Gas Companies are Helping the Nation

THE COLUMBIA RAILWAY, GAS & ELECTRIC COMPANY, of Columbia, S. C., has given several of its men to the nation through the draft, and others have volunteered. S. W. Brown is superintendent of the gas department.

THE SUBURBAN GAS & ELECTRIC COMPANY, of Revere, Mass., has given six of its employees, through voluntary enlistment, to the service of the nation. Eleven employees are subject to draft. Forty-one employees subscribed $2,450 to the first Liberty Loan. C. F. Chisholm is manager of the company.

THE EAST BOSTON GAS COMPANY, of East Boston, Mass., has given a large number of its employees to the military service of the nation and other employees have subscribed more than liberally to the Liberty Loan. N. W. Gifford, secretary of the New England Association of Gas Engineers, is general manager of the company.

ROSSITER S. SCOTT, formerly of the Consolidated Gas, Electric Light & Power Company of Baltimore, has placed himself at the disposition of the Government for assignment to duty as a citizen engineer or as an army engineer. He holds a commission as captain of engineers in the U. S. Officers' Reserve Corps. The Government has not yet exercised its option, however, apparently considering that he is doing more useful service in his present capacity as vice-president and general manager of the Coastwise Shipbuilding Company, builders of wooden hull vessels, of Baltimore, which was conceived by him about a year and a half ago, incorporated in June, 1916, and is now turning out ships at a rapid rate, with the expectation of attaining an even greater output in a relatively short while. Mr. Scott is enthusiastic in regard to the value of gas company training, the following words being his: "The shipbuilding industry, as we all know, is exceedingly important, intensely active, and excessively exacting in these times. But when one has seen considerable service in the ranks of the various branches of the gas industry, and has been through its school of fire, one need have no fear of tackling other lines of business.

"The writer feels that his fourteen years of service in the ranks of the gas industry has been of inestimable value to him in driving out of the rough places in the shipyard, enabling him to 'hole-out' from the sand pits, bunkers and other man-fashioned hazards, with a reasonably good score.

"It is believed by many that the gas industry, through its nature and attending obligations, offers more intensive training and opportunities to young men toward the development of high character and ability than almost any other line of business that could be selected; and conscientious and intelligent work in its ranks soon brings as a reward the proper recognition and appreciation of the real meaning and forceful value of the word Service, which is synonymous with Success."

THE FROST GAS COMPANY, of Fredonia, N. Y., has made liberal appropriations to the Red Cross organizations located in its territory, including Dunkirk and Fredonia. The Fredonia branch received a check recently for $400, which will be a great help in its work. The appropriation for the Dunkirk chapter is understood to be $750.

THE NEWTOWN GAS COMPANY, of Newtown, N. Y., subscribed $165,000 to the Elmhurst Liberty Loan fund. This has been held at the Bank of Long Island, at Jamaica, as rebate money, and by a decision of the court the company is allowed to invest it in Liberty Bonds. The money had been on deposit for over one year.

THE PEOPLES GAS LIGHT & COKE COMPANY, of Chicago, employees responded in mass to the Second Liberty Loan. Thirteen hundred and eighty-one—approximately half the total number of persons on the payroll—have bought bonds aggregating $82,200. Almost every employee who bought a second loan bond is also the owner of a Liberty Bond of the first series.

THE AMERICAN GAS FURNACE COMPANY, makers of industrial fuel furnaces, of 26 John Street, New York City, has already found a use for their Liberty Bonds. They have purchased the six-story structure in which they are located, and a large part of the payment was made in Liberty Bonds.

HORACE S. EARLL is the second member of the advertising department of the United Gas Improvement Company to go into active military service. He is a member of the 310th Field Artillery, stationed at Camp Meade. He is a graduate of Girard College, and was at one time a member of Company B of the Second Regiment.

Cement-Joint Main in Service 65 Years Looks Good for Another Period of Equal Length

Walter G. Africa, manager of the Peoples Gas Light Company, of Manchester, N. H., has called this journal's attention to the fact that the company recently removed some 10-in. bell and spigot cast-iron main which was laid in 1852, making a service period of sixty-five years. Mr. Africa states that the pipe looked good to last another sixty-five years. The original joints were made of cement and were perfectly tight.

Merchandising Gas

Chicago Company's Experience a Good Model for Effective Gas-Fired Incinerator Merchandising

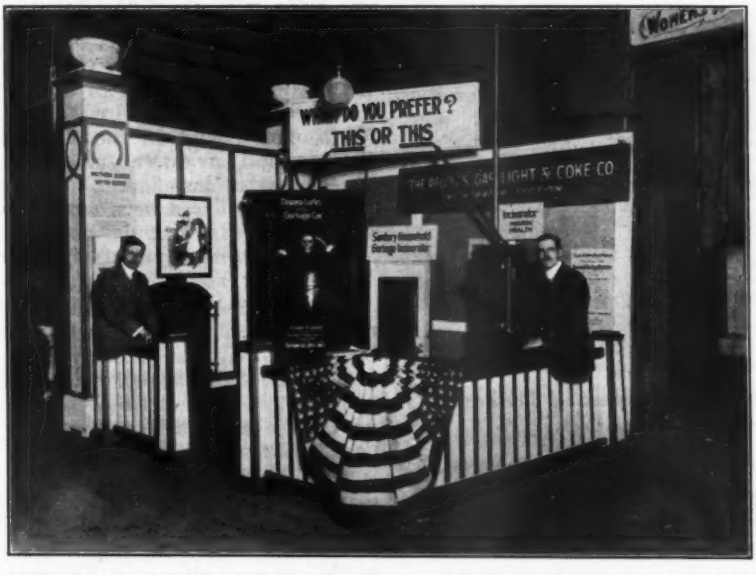
Animated Skeleton an Effective Salesman---Efforts to Popularize Use of Appliance Splendidly Effective---Old Methods Go by the Board in Favor of New

By LOUIS RESNICK
Special Correspondent, American Gas Engineering Journal

Once they sold incinerators on the "odor" basis; now its most effective selling point is hygienic value, not moderately and gently brought home, but with the consequences of indifference brought out in their harshest outlines.

The old method made use of a vividly painted picture of an uncovered garbage pail overflowing with festering rubbish; rats and roaches running to and from the can; and the vile odor of garbage pictured as rising from the can in heavy fumes. The new uses a good photograph of a garbage can with a skeleton, the symbol of death, rising with outstretched arms ready to clutch all life within reach—or better still, the actual can with a paper mache skeleton, electrically operated, slowly uncovering the can from within, rising before you with green glary eyes—reminding you of one thing, death.

Chicago, that is the potential incinerator buyers of Chicago, has effectively pronounced judgment as to the relative effectiveness of the two methods.



MANY WERE SO IMPRESSED BY EXHIBIT THAT THEY RETURNED TO VIEW IT A SECOND AND EVEN A THIRD TIME

THIS EXHIBIT PROVED A FORCIBLE SALES MAKER

The old method had up to a year or so ago been used in Chicago as elsewhere. The sale of incinerators, especially gas-fired appliances, had been slight. About a year ago, however, the Peoples Gas Light & Coke Company, of Chicago, decided that there was a big field for an efficient gas-operated incinerator, and so a special incinerator division was created in the commercial department, of which O. T. Knight is head, and John P. Walsh was put in charge of the new division.

Avoiding the Repellent

The Peoples company men took the view that the "Do you like the smell of garbage?" method and the form of art used to illustrate it were repellent, and even nauseating. Being good students of psychology, they realized, on the other hand, that as a rule the American public is curious, ofttimes even morbidly so. It was therefore decided to put to the fore in the incinerator-selling campaign the health phase and to make the garbage can the symbol of disease and death, rather than of rats and roaches.

The success of this method may be judged by the fact that although less than a year has elapsed since the gas-fired incinerator was introduced to

the Chicago public, the Peoples company's garbage-destroying appliances are now in use in the four corners of Chicago, in the high-class residence, in the home of moderate income, in the public institution and the small lunch room.

A Paradox

The unmistakable approval of the public was stamped on the modern method of illustrating and selling incinerators at the Coliseum, where the annual Household Show has just closed after a two weeks' run. During the first ten days 58,471 persons attended the show and 191,847 visited the incinerator exhibit of the Peoples Gas Light & Coke Company. Sounds paradoxical at first.

The only explanation of the apparent conflict in these figures is that those who saw the exhibit returned the second and the third time to look and listen.

Strong Competition

Of course, the automatically operated skeleton was the hit of the exhibit. The contrivance is the fruit of the fertile brain of John F. Weedon, advertising manager of the company. Though all four models of incinerators sold by the Peoples company were on display at the booth, the incinerator exhibit was often mistaken for a hygienic demonstration.

Thus one lady addressed Mr. Walsh:

"Is this the health department exhibit?"

His answer was:

"Yes, madam; the health department of the gas company."

The significance of the attendance figures is even greater when it is known that to get to the incinerator exhibit one had to pass the main entrance to the "Vaudeville and Fashion Show on Living Models." To forego the treat promised by that sign required a strong counter-attraction, and this the "Jack-in-box-Death-Lurks-in-Garbage-Can" proved to be.

Details of Selling Plan

Several sales of incinerators were consummated at the show each day, and more than 200 good prospects were "lined up." The details of the Peoples company's selling campaign were described by Mr. Walsh as follows:

"At present we are confining our efforts largely to the higher-class residence sections. In time we will give more attention to the smaller residence and apartment-house field, the restaurant, grocery and lunch-rooms field, and the hospitals, hotels and other public institutions.

"We first invite the attention of the lady of the house to the gas-fired incinerator by a circular letter which contains a photographed illustration of the incinerator installed in a modern kitchen, a treatise on 'Garbage and Flies' by Dr. A. W. Evans, former health commissioner of Chicago and now editor of the 'How to Keep Well' department of the Chicago *Tribune*, and our own arguments for an incinerator installation.

"This is followed by a more personal letter in which we point out 'What Investing in an Incinerator Will Do For You.'

"At the same time we acquaint all the reputable physicians of the city, by means of circular letters, with the advantages of the incinerator method of household waste disposal over the private scavenger system now practised in Chicago.

"We supplement these communications with personal calls in which we are able to go into greater detail on the health phases, the improvement to the general aspect of property,

(*Continued on page* 437.)

Garbage and Flies

In the Chicago Tribune's "HOW TO KEEP WELL" department, conducted by Dr. W. A. Evans, the eminent authority on public health, the subject of "Garbage and Flies" was discussed in part, as follows on August 6th, 1917:

"The paramount health importance of garbage lies in its relation to flies. Wherever garbage is not properly disposed of flies abound. Note a second fact: Wherever flies abound two death rates are high – typhoid fever and infantile diarrhoeas.

"There will always be dispute when one says that diarrhoea in babies is spread by flies or when any one attempts to prove just how flies spread typhoid, but a Scotch verdict of guilty, though not proven, is in order. The curve of the fly rate follows too closely the typhoid and the infant mortality curve for any other conclusion.

"The disposal of garbage is divisable into three parts – the period of the garbage can, the collection period, and the disposal period. Nine-tenths of the literature – and for that matter nine-tenths of the "rowing by women's clubs and improvement associations – relate to garbage disposal.

* * * *

"But the most important of the three periods is what might be termed the can period. If the garbage is not to be fed to hogs it should be drained and wrapped in paper. This keeps the flies away, keeps the can clean, and is advisable from other standpoints. Even when the garbage is to be reduced it can be wrapped, since it is customary first to roast out the water. If the garbage is to be burned in a domestic furnace or in an incinerator or destructor there can be no objection to wrapping." (Chicago Tribune, August 6, 1917).

FROM THE CHICAGO DAILY NEWS
August 20, 1917.

KILL FLIES AND SAVE BABIES

Dr. Robertson Warns of Increase in Infantile Paralysis.

Infantile paralysis is on the increase in Chicago.

"Kill the flies," was the warning sounded by Health Commissioner Robertson to-day.

"Although it has not been proved, many authorities say flies help to spread the infant plague," he said. "People should do all in their power to keep flies out of the house—out of every place, in fact. This is the season for development of infantile paralysis."

Burn Garbage and Abolish Flies

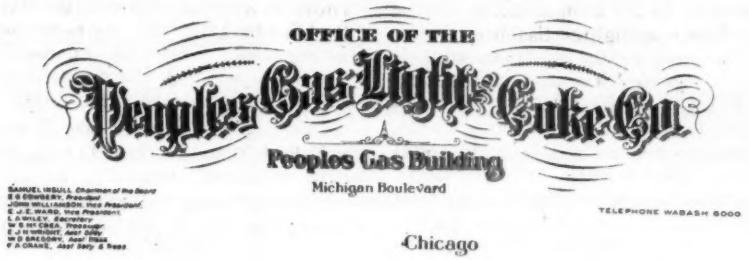
¶ The Garbage Destroyer that is recommended and **guaranteed** by The Peoples Gas Light & Coke Company banishes the flies by abolishing garbage.

¶ Get rid of the garbage can and the disease conveying flies will keep away from you.

THE PEOPLES GAS LIGHT & COKE COMPANY

PEOPLES GAS BUILDING — TELEPHONE WABASH 6000

HOW THE COMPANY MADE USE OF THE WORDS OF AN ACCEPTED AUTHORITY TO DRIVE HOME VALUE OF INCINERATOR



OFFICE OF THE

Peoples Gas Light & Coke Co

Peoples Gas Building

Michigan Boulevard

Chicago

TELEPHONE WABASH 6000

Dear Madam:

Believing that you are interested in our incinerator, we take the liberty of calling your attention to the following advantages you would derive by installing one in your home.

WHAT INVESTING IN AN INCINERATOR WILL DO FOR YOU:

Insure your home against the greatest menace to health - THE FLY - attracted to your premises by his source of food - THE GARBAGE CAN.
Avoid the possibility of drawing ants, roaches, mice etc. into your house. "An ounce of prevention is worth a pound of cure."
Save you doctors and druggists bills.
Save the expense of frequently replacing old and battered garbage cans.
Make it unnecessary to go out of doors in bad weather to dump garbage and thus insure prompt and regular removal of same from proximity to your food being prepared in the kitchen.
Make you independent of the scavenger and avoid the garbage accumulation nuisance during his strikes.
Completely banish the ill-smelling and unsightly garbage can from your premises and avoid having the filthy scavenger wagon stop at your door.
Furnish you the best known fertilizer for your plants, gardens and lawn - the fine sterilized ash.
Install in your home the greatest boon to health that has been invented since the day when sanitary plumbing fixtures and modern sewer systems replaced the old-time cesspools.

Testimonials furnished on request. Our special representative will be pleased to call at your convenience to give additional information or to take your order.

Yours very truly,

THE PEOPLES GAS LIGHT & COKE CO.

INCINERATOR DIVISION.

A LETTER THAT IMPLANTED CONVICTION IN THE MINDS OF THE CITY'S HOUSEWIVES

Pushing Gas Ranges Effectively

With the approach of the holidays comes the time when gas ranges can be pushed very effectively, appeal being made to their ease of operation and the fact that the Thanksgiving or Christmas dinner can be prepared on them at a great saving of time and strength.

There is also another very potent argument that can be brought to bear at this time, and that is the fact that a stiff advance may be predicted in the near future. If the public is given a sane, practical reason for this advance there will be a general inclination to purchase at the present price. One of the most effective ads along this line was recently prepared by the Citizens Gas Company, Indianapolis, Ind. At the top of the ad was the cut of a young woman canning and a company of soldiers marching, with the caption in small letters, "Save and Serve." The ad proper was headed in bold type:

COMING!

ADVANCE IN PRICES ON GAS RANGES

Indications point to the necessity of a considerable increase in the price of gas ranges in a few weeks. Range manufacturers predict an advance, which will probably reach 50 per cent on account of their inability to secure the metals used in the construction of the range.

THIS MATERIAL IS BEING USED IN MAKING MUNITIONS

Save one-third to one-half by purchasing a new gas range now, as the prices are limited to stock on hand.

FIVE DOLLARS ALLOWED FOR YOUR OLD GAS RANGE

Provided same is in use—whether it's a coal or gas range, as part payment on any new cabinet gas range selling for $32.00 or more.

All gas connections made free.

CITIZENS GAS COMPANY
Majestic Building

A good advertisement like that should be backed up with an equally fetching window display. Nothing attracts like real life, and the most effective way to advertise the efficiency of gas is to give a demonstration in your show window. This was recently done by Oilman, Dayton, Ohio, who showed a window patriotically backed with flags. At one side was a mound on which were set a number of gas irons. In the center was a two burner gas stove on which was a porcelain kettle, and near it stood a wax model of a young woman in gingham dress. At the opposite end was a white enamel table, and at the side a kitchen cabinet. At certain hours of the day this figure was removed and a demonstrator gave instructions in the making of war bread and other wheat substitute foods. Of course she attracted a large crowd, and if a card similar to the ad above quoted had been placed in the window it would have hastened the sale of many a dilatory purchaser.

Chicago Incinerator Merchandising

(*Continued from page* 436.)

and the other qualities of the incinerator. To the private householder we also point out that the fine ash which is the only residue of the destroyed garbage makes an excellent fertilizer for lawns and gardens, and to the big institution which would require a battery of incinerators we call attention to the fact that fertilizer companies are paying $15 a ton for this garbage ash."

Mr. Walsh and J. W. Aymar are devoting all their time to the installation of incinerators, and the scores of Peoples salesmen are also giving attention to this appliance. Yet Mr. Walsh says:

"We are only scratching the surface."

Recent Improvements on Garage Heater Lead to Belief That Practically Perfect Model Has Been Devised

The Scientific Heater Company, of Cleveland, Ohio, feels confident that, with improvements recently incorporated, it has succeeded in producing a practically perfect model of its garage heater.

It was found that the pilot arrangement was somewhat too high. This was continually exposed to the action of the products of combustion from the main burner. To overcome the difficulty the pilot has been dropped down far enough to get out of the road of any such disturbance. The pilot, it is claimed, now burns perfectly under all conditions, and is absolutely unextinguishable.

The new lighter has been considerably improved by the substitution of a hollow piece of brass tubing in which is placed the pyrophoric metal, which forms the spark, with a coil spring placed back of this metal. The function of the spring is to hold the pyrophoric metal against the file wheel. By so doing a free and even fit of this sparking at all times is made possible.

The size of the shoulder through which this metal must pass is also reduced, and thus the possibility of condensation collecting at that point and shortening the life of the sparking metal has been decreased.

Another important change has been in the general construction of the burner. There has been some trouble in certain artificial gas territories with the old style burner flashing back. This was because of a short mixture tub the diameter of which was considerably too large.

In view of this fact the size of this mixer has been decreased, and the length extended about 2½ in. By such arrangement a free and unobstructed supply of air at both the primary and secondary point has been obtained.

The company recently issued a new Sales Campaign Book, which contains information of interest to every gas company. A copy will gladly be mailed to any gas company official requesting one.

Des Moines Company's Sales Hampered by High Prices Necessary to Obtain Men for Campaign Efforts

The Des Moines Gas Company, of Des Moines, Iowa, has experienced a rather unusual year, in that high wages, due to the construction of a military cantonment near that city, made it impossible to obtain men for campaign purposes.

There has been a very large increase in business done by the hotels and restaurants of the city through the large number of soldiers and friends visiting them. No new installations were made by the gas company on account of this business, however, as the increased consumption was handled by existing equipment.

Much New Business and Increased Output at Zeeland, Mich., and Salt Lake City, Utah

Gas consumption in Zeeland shows a good increase, with fifty-nine more consumers than a year ago. The Utah Gas & Coke Company, of Salt Lake City, a subsidiary of American Public Utilities Company, sold 892 gas ranges to Oct. 10, and gained 1,174 meters in service, indicating that practically 300 new consumers had moved into the city, bringing their ranges with them. During the same period 466 new service pipes were laid, showing that over 700 pipes inactive last year are now in service, and 636 industrial gas consuming appliances were installed.

OFFICE OF THE

Peoples Gas Light & Coke Co.

Peoples Gas Building

Michigan Boulevard

TELEPHONE WABASH 6000

Chicago June 5, 1917.

Dr. B. G. Williams,
2076 Heyward Av.,
Chicago, Ill.

Dear Sir:

We take the liberty of addressing you at this time on the subject of household waste disposal, believing that you, as one vitally interested in bettering sanitary conditions about the home, will appreciate a means of eliminating the many undesirable features of the present scavenger system.

The great need for a satisfactory solution of this problem has long been recognized by the medical authorities, realizing that in a large measure the spreading of disease can be directly attributed to flies and vermin feeding on decaying garbage, particularly in the warm weather.

The only logical way to dispose of such waste is by burning it right at its source, as it accumulates and while it is still sweet and clean; by this means dispensing with garbage itself. You will, we venture to say, agree with us that this principle is right.

The leading manufacturers of appliances have worked for years to develope a satisfactory garbage burner for household use, but not until the advent of the Ricketts Gas-Fired Incinerator, has a device been put on the market which we have perfect confidence in recommending and standing back of. We believe this incinerator will eventually be installed in every home in the select residential sections of the city, and unquestionably among the first to appreciate its merits, will be the prominent physicians living in their own homes.

We invite your inspection of these incinerators in our Main Office Salesroom, 122 S. Michigan Avenue. How admirably they are designed to do the work, can only be described in a personal interview and we will appreciate your indicating, by filling out and mailing the enclosed card that you desire our special representative to call and go into particulars.

Trusting that you will favor us with a reply, we are

Yours very truly,

THE PEOPLES GAS LIGHT & COKE CO.

JPW/IM

INCINERATOR DIVISION.

USE OF CO-OPERATION OF CITY'S PHYSICIANS WAS NOT OVERLOOKED BY THE CHICAGO COMPANY IN ITS INCINERATOR WORK

News of the Gas Industry

Seattle Increase Goes Into Effect Now—Hearing Postponed Until Jan. 2

Beginning November 1, the 48,000 gas consumers in the city of Seattle will have their bills increased by 40 cents a month, at the least calculation.

Of this increase 25 cents a month will be a "ready to serve" charge on each gas meter, and 15 cents will be the increase for each thousand feet of gas consumed. The increase to larger consumers will be in proportion to the amount of gas used.

Under the present tariff of the Seattle Lighting Company there is no meter charge, and to the ordinary consumer the net rate for gas is $1 a thousand feet. Under the new tariff 25 cents a month is charged for each meter and the net rate for the ordinary consumer is fixed at $1.15 a thousand feet, with a proportionately lower rate for larger consumers.

Commission Approves Raise

The public service commission at Olympia recently issued an order directing the gas company to put its new tariff into effect November 1, and in the same order extended the time for the City of Seattle to present its objections to the new tariff from October to January 2. The burden of proving that the increases are justified remains upon the company. If it fails in this proof, all collections in excess of what the commission finally determines to be a reasonable charge must be returned to individual consumers.

To this end the company is directed by the commission to so keep its books that individual rates against all patrons shall be clearly indicated.

Increase Petition Granted at Manitowoc and Sheboygan, Wis.

A slight increase in gas rates in Manitowoc and Sheboygan has been authorized by the railroad rate commission. The price for commercial, fuel and illuminating gas is fixed at $1.20 net. Rates for industrial gas, for users of more than 10,000 cu. ft., is less than 95 cents net.

Saint Louis May Change Standard to Help Government

Mayor Kiel recently made public a letter received from Major J. H. Burus, of the Ordnance Department of the War Department, which he said might mean that it would be necessary to lower the heat units in gas now required by the city of the Laclede Gas Light Company in order to aid the War Department in obtaining a sufficient supply of a chemical used in the manufacture of a high explosive.

Supply Not Sufficient

"The War Department finds it imperative," he said, "to develop the capacity of the country for the production of toluol to a much greater extent than now exists. While most of the by-product coke plants and some few gas plants are recovering this material from their gas the amount so obtained is considerably less than the estimated requirements for the next year.

"It is, therefore, a very important military necessity that we arrange with many gas companies throughout the country for the installation of apparatus to recover and refine toluol to be used in the manufacture of high explosives during the present emergency."

The letter stated that it might be necessary for the city to consider a modification of the heat standard requirements of the present.

To Meet Gas Officials

Mayor Kiel said it was his intention to co-operate with the War Department in every possible way, and that he would have a conference tomorrow with officials of the Laclede Gas Light Company to determine if any change is necessary.

The present heat standard is 600 B.t.u., agreed upon by the mayor and the Laclede company officials nearly two years ago.

Increase Asked by Mount Carmel, Ill., Company

The Mount Carmel Public Utility & Service Company has applied to the Illinois Public Utilities Commission for permission to increase its rates for gas, electric and hot water heating service.

To Grant Competitive Franchise Would be Contrary to Policy of State of N. Y. is Commision Ruling

In dismissing the application of a private lighting plant for approval of the exercise of rights and privileges under alleged franchises in Bronxville, Westchester County, N. Y., the Public Service Commission of New York, Second District, holds that to allow competitive lighting systems would be in deliberate disregard of the law and settled policy of the State, and would impose a condition from which the public might, in the end, be heavy sufferers. The decision affects the State as a whole

Sacramento Gas Company Asks Higher Rate

The Sacramento Gas Company has filed with the Railroad Commission of California an application for authority to revise its rates to conform with those recently established by the commission for its competitor, the Pacific Gas & Electric Company.

In its application the company bases its claim for increased rates on increased expenses, the most important item being oil, which has gone up 112 per cent during the past year.

Increase Petition Filed by Cairo (Ill.) Company

The Cairo City Gas Company has filed application with the State Public Utilities Commission asking for an increase in rates in gas consumed in Cairo, Ill.

The present rate is $1.50 per thousand cubic feet with 25 cents off for the payment of bills before the tenth of each month.

Efforts by the city council to obtain a lower rate reached the stage of several conferences with officials of the McKinley company, owners of the plant, but the conferences ended with a half-way promise to put the lower rate into effect when the price of coal began to soar. Since then they have not been resumed.

James Francis Meagher Dead

All Chicago mourns the passing of James Francis Meagher, former president of the Peoples Gas Light & Coke Company, of Chicago, and one of the leading attorneys of that city, who died at his summer home in Greenwich, Conn., on Oct. 30—a short mention of which was made in last week's issue of this journal. For more than a quarter of a century Mr. Meagher was chief counsel for the Peoples company; from 1906 to 1912 he was first vice-president of the company, and from 1912 to 1915 its president. He retired in July of the latter year because of a paralytic stroke brought on by overwork, and he never fully recovered. Mr. Meagher was pointed out in Chicago as a self-made man and as a "fighter who knew no defeat." It is said that he loved a courtroom battle above all things, and most of his career was spent fighting such battles for the franchises and rates that meant the development of the Peoples company.

Born on Long Island, N. Y., on Jan. 26, 1858, he was brought to Chicago by his parents immediately after the Civil War. The father died soon after, and the boy was thrown on his own resources at the age of eleven years. He obtained a very limited education in the schools, but was a persistent student at home in odd hours after work.

At thirteen he became office boy for George C. Campbell, counsel for the Rock Island Railroad. He studied law and was admitted to the bar in 1880. For four years he fought an individual fight. In 1886 he organized the firm of Winston & Meagher. Later this firm became Meagher, Whitney, Ricks & Sullivan, with Mr. Meagher at its head until the time of his death. Mr. Meagher devoted all his time to the practice of law and the affairs of the Peoples gas company, and never mixed in politics.

One of Mr. Meagher's greatest achievements for the gas company was married to Pauline Hayes. the quo warranto proceedings brought by State's Attorney Deneen to test the act under which the gas companies of Chicago were consolidated.

Mr. Meagher had been in Greenwich all summer, hoping to regain his health there.

On Feb. 27, 1891, Mr. Meagher was married to Pauline Hayes. Mrs. Meagher died on Jan. 21 of this year. Mr. Meagher is survived by four children: Pauline Hayes, Grace, James F., Jr., and Richard H.

Personal Notes

W. J. SWARTING, engineer on construction and operating work of the power house and gas work of the Peoples Power Company, of Rock Island, Ill., has been named superintendent of the Peoples Gas & Electric Company at Mason City, Iowa. Mr. Swarting's transfer is a promotion in recognition of his services to the company.

CLARENCE D. ROBERTS, who was formerly cashier of the Haverhill (Mass.) Gas Light Company and for the past two and a half years connected with the Blackstone Valley Gas & Electric Company, as head of the improvement department, has recently been promoted to the position of salesman and power engineer.

W. J. PEAD, JR., was recently elected superintendent of the Lowell (Mass.) Gas Light Company, succeeding W. B. Osborne, who was elected president and general manager of the Worcester (Mass.) Gas Light Company, as was noted in the Oct. 27 issue of the AMERICAN GAS ENGINEERING JOURNAL.

JOHN SHOOK, who has been connected with the Birmingham Railway, Light & Power Company in the gas department since Jan. 1, has resigned his position and has accepted a position with the Alabama Water Company at Anniston, and will leave shortly to assume charge of his new duties. Although Mr. Shook has only lived in Bessemer a short time, he has demonstrated his ability as an organizer of civic activities, and has headed a number of committees in war work; at the present time he is directing the food conservation campaign in the Bessemer district.

PAUL MCCONNELL, of the Birmingham (Ala.) Railway, Light & Power Company, has been appointed to take the place of John Shook, who has recently resigned his position in the gas department.

C. E. MURRAY, secretary and treasurer of the Toledo (Ohio) Railways & Light Company, resigned to take a similar position with the Empire Gas & Fuel Company in Bartlesville, Okla. He will be auditor for fifty-three companies, representing all the vast oil and gas interests of the Henry L. Doherty Company in Oklahoma, Wyoming, Kansas, Texas, Colorado and California. These interests are next in volume to those of the Standard Oil Company. Officials of the company and other friends recently gave a farewell dinner in honor of Mr. Murray at the Toledo Club.

A. H. WARNER, who has been in charge of the drafting room of the United Gas Improvement Company's construction department, died in Philadelphia on Nov. 5, at the age of sixty-two, after an illness of more than a year. He came to this country from England in 1885 and entered the employ of the firm of Granger & Collins as a constructing engineer. From 1886 to 1888 he was superintendent of the Johnstown & Gloversville (N. Y.) Gas Company. In 1888 he became chief draftsman for the United Gas Improvement Company. Mr. Warner, while not a member of a gas association, was well known to many of the fraternity and had hosts of friends among his fellow employees.

A. E. MERCHANT has been appointed general superintendent of the New Orleans Gas Company to succeed H. N. Harriman, according to a recent announcement. Mr. Merchant is one of the best known gas experts in the country and often has visited New Orleans and has been connected with Bertron, Griscom & Co., of New York and Philadelphia, for a number of years, and was in charge of this company's operations in Attoona, Pa.; Bloomington, Ill., and other points. He is a graduate of an English technical college. He came to the United States about twenty-five years ago and was with the United Gas Improvement Company, of Philadelphia, for a number of years.

R. B. MACDONALD, for the past ten years superintendent and later general manager of the Fort Dodge (Iowa) Gas & Electric Company, has been appointed general manager of the Peoples Power Company, of Rock Island, Ill. Mr. MacDonald assumed charge of the office the first of the month. For eight years before he went to the Fort Dodge plant Mr. MacDonald was with the Lincoln Gas & Electric Company, Lincoln, Neb., and while there he took special course in engineering at the University of Nebraska.